

THE
AMERICAN JOURNAL OF PHARMACY.

SEPTEMBER, 1869.

ON A NEW AND SIMPLE PROCESS FOR FLUID EXTRACTS,
BY WHICH ANY DRUG MAY BE EXHAUSTED BY
PERCOLATION AND WITHOUT HEAT.

By SAMUEL CAMPBELL, of Philadelphia.

The subject of fluid extracts is one that has attracted the attention of the most eminent men of our profession, and has called forth numerous essays, elaborate and seemingly unanswerable in their arguments and forms. Messrs. Graham, Squibb and Procter, than whom we have no better authorities at the present time, have each in their turn advanced their views on the subjects of percolation and menstruums required to form perfect fluid extracts, and no doubt have given to the medical world a beautiful and substantial theory; and yet if any one will take the time and trouble to perform the simple experiments suggested in this paper, he will find that, in following too closely the suggestions of our teachers, we have overlooked the simple and yet, in my opinion, the most important step to successful percolation, viz., *maceration*. Holding a prominent position in an establishment where all the official preparations are prepared largely, I was induced to try and see whether the problem could be solved whereby, in making fluid extracts, heat could be avoided, and whether the great waste or use of alcohol could be dispensed with in their preparation, and, to my satisfaction, I have had no difficulty whatever in thoroughly exhausting any substance of any character with the proper men-

struum in the proportion of one pint for every sixteen troy-ounces, by allowing it to macerate for four days in a conical percolator, previous to percolation. The subject is not a hastily formed theory, but is one that is offered as the result of actual experiments with its results and residues open for inspection and consideration. I have taken the liberty to differ from the prescribed menstruum laid down in the Pharmacopœia, by following out Mr. A. B. Taylor's suggestions on the use of glycerin as a solvent for the various active properties of drugs, and have been surprised at the results obtained from its use; and it is with pleasure that I fully confirm his views regarding its use and adoption by the present revisers of the Pharmacopœia, in the various menstrua. In all the experiments I used Bower's Glycerin. I have adopted as a grade of fineness of powder for percolation, that which is known in the Pharmacopœia as moderately coarse, or which will pass through a sieve of forty meshes to the linear inch, as one within the means of any retail pharmacist to powder himself. I find that about five-eighths of the whole quantity can be obtained of this fineness by means of a Swift's drug mill; also, I deem a greater fineness of powder than this as being an unnecessary and unwarrantable waste of time and physical force, since maceration is what is wanted, and not fineness of powder, to make a successful percolation. The common glass funnel I have found to be the best percolator, both in point of convenience and cleanliness, also its conical shape, allowing the proper expansion of the material whilst macerating, previous to percolation. The query has frequently presented itself to my mind as to what is a fluid extract, or what is it supposed to, or should it represent. If I understand aright, a fluid extract is a concentrated tincture, or solution embodying all the sensible and remedial properties of a drug or drugs, and should represent the drug as it is thrown into the hands of the pharmacist from nature, not one or two active principles of the drug alone to be represented, but should approximate as closely as possible in its character and properties to the crude drug itself, in smell, taste, and remedial effects; bearing these points in mind, I undertook the following experiments, with what success the samples will prove. The officinal fluid extracts are

divided into four classes, viz., alcoholic, hydro-alcoholic, acetic and saccharine, but by my method will consist of only two classes, viz., alcoholic and hydro-alcoholic. The first or alcoholic, with one-fourth glycerin, and they may be enumerated as follows: buchu, lupuline, valerian, veratrum viride, ginger. The menstruum used in the hydro-alcoholic or second class, composed of one-half alcohol, one-fourth water, one-fourth glycerin; under this head are the following, including the saccharine and acetic fluid extracts: cimicifuga, cinchona, colchicum root, colchicum seed, conium, dulcamara, ergot, gentian, hyosciamus, ipecac, rhubarb, sarsaparilla, sarsaparilla compound, senna, serpentaria, spigelia, taraxacum, ura ursi. The Pharmacopœia directs that a fluidounce of a fluid extract should faithfully represent one troyounce of the crude drug, excepting cinchona and wild cherry bark, which are directed to be one-half the above strength, both of which drugs I have prepared of full strength, so that there should be no exception as to the uniform strength of all adopted. In order to prove the accuracy of my method in exhausting cinchona bark, I took the residue in percolator after I had obtained sixteen fluidounces of extract from sixteen troyounces of the bark, dried it, redampened it, and repacked it in the funnel, and passed six pints of dilute alcohol through it until it came away colorless, then evaporated it to a soft extract, which weighed two drachms, of a slightly nauseous taste, but devoid of bitterness, thus proving conclusively the success of my experiment, as to the almost entire exhaustion of the drug of all its active matter. Cinchona bark has been admitted to be one of the most difficult drugs in the whole catalogue to exhaust. In making a fluid extract of wild cherry bark, I used a menstruum composed of equal parts of glycerin and water, making it as I said before, ounce for ounce, and it will be found to faithfully represent the bark having the natural taste and odor in a marked degree.

My method consists in first obtaining a powder, moderately coarse, dampening it with the menstruum, and then packing uniformly in a glass funnel, having previously placed a cork in the end of the funnel, also a piece of sponge in the neck moistened with the liquid; then covering the surface with a disc of

paper, and pouring on the remainder of menstruum in the proportion of sixteen fluidounces for every sixteen troyounces of drug. Cover over so as to prevent evaporation, and allow to macerate for four days; after that time remove the cork, and use a displacing liquid of either strong alcohol or dilute alcohol, or water, corresponding to the menstruum employed, (omitting the glycerin) by pouring it over the surface of percolator in order to displace the original menstruum; when sixteen fluidounces for every sixteen troyounces have passed through, it will be finished, and will be found to be perfectly exhausted, thereby avoiding heat, and any large use or waste of alcohol. I find that it requires about an equal measure of the displacing liquid to displace the first or original liquid through.

The difference between my method and that generally employed, consists simply in adopting a uniform grade of fineness of powder for all substances, in long maceration and in the use of glycerin. The officinal method is to reserve the first three-fourths, exhaust and evaporate to one-fourth; in my method I give a long maceration and percolate the quantity at once, thereby avoiding reservation, evaporation, and simplifying the process very much, and furnish a much better product.

The experiment is worth a trial, and I feel satisfied that if faithfully followed out will gratify any one with the result, and will enable him to dispense reliable fluid extracts fully representing the crude drug, which in the present time is a great desideratum.—AUGUST 6, 1869.

PHARMACEUTICAL NOTICES.

By WILLIAM PROCTER, JR.

The following formulæ, having more or less merit, have been used in Philadelphia, and are offered to our readers.

Tinctura Rhei Dulcis.

Take of Rhubarb, coarsely powdered, eight troyounces.

Liquorice root, " three "

Aniseed, " three "

Orange peel, " one "

Cardamom seed, " four drachms.

Mix the powder, moisten them with half a pint of the diluted alcohol, pack firmly in a conical percolater, and pour on diluted alcohol until a gallon of tincture has passed, which should be shaken to render it uniform.

Pilula Terebinthinae Composita.

Take of Copaiba, three troyounces.

Dried Sulphate of Iron, in fine powder, a troyounce and a half.

White Turpentine, four troyounces and a half.

Cubebs, in fine powder, six troyounces.

Calcined Magnesia, three drachms.

Triturate the magnesia, which should be recently calcined, with the copaiba previously warmed, add the turpentine, previously freed from impurities by straining, then the sulphate and cubebs, and incorporate them well together. Lastly, when by standing the mass acquires the proper consistence, divide it into five grain pills. This mass by age becomes too hard for use owing to the oxidation of the volatile oils, and should be prepared in quantities suited to the demand. The pills, if to be kept long, should be coated with sugar or gelatin.

Tinctura Kino Composita.

Take of Opium, in powder, two drachms.

Kino, " two drachms.

Cochineal, " two drachms.

Camphor, " three drachms.

Cloves, " three drachms.

Diluted alcohol, two pints or q. s.

Mix the powders and prepare a quart of tincture by maceration with agitation, or by percolation as preferred.

This is a favorite preparation for Diarrhoea. Each teaspoonful contains about half a grain of opium, and three quarters of a grain of camphor.

Tonic Narcotic.

This formula originated with Prof. Samuel Jackson, late of the University of Pennsylvania, who formerly prescribed it. Its complexity and want of homogeneousness are objectionable,

though its therapeutic power must be very decided when prescribed judiciously :

R Extracti opii aquosæ	ʒj.
Ext. Cannabis Indicæ,	ʒiiss.
Extr. Belladonnæ,	ʒss.
Extr. Conii,	ʒj.
Extract. Cinchonæ, (Wetherill's)	ʒij.
Strychniæ nitratis,	gr. ss.
Ol. Caryophylli,	gtt v.
Ol. Aurantii Cort.	gtt x.
Ol. Myristicæ,	gtt iij.
Alcoholis,	
Aqua, aa.	q. s.
Syrupus Aurantii Cort.	fʒj.

Dissolve the ext. cannab. in half an ounce of alcohol ; dissolve the strychnia, opium, belladonna and conium in half an ounce of water ; the extract of bark in an ounce of diluted alcohol, then mix these with the syrup, and lastly add the volatile oils and mix with sufficient diluted alcohol to make the whole measure three fluidounces. Dose, 5 drops, three times a day, previously shaking the vial.

Tyson's Antimonial Powders.

Recipe No. 1.—

R Antimonii oxidi,	gr. ij.
Calcis phosphatis,	gr. xviii.
M. ft. pulvis.	

Recipe No. 2.

R Antimonii oxidi,	gr. ij.
Potassæ sulphatis,	
Calcis phosphatis, aa.	gr. ix.
M. ft. pulvis.	

Extractum Gallæ Compositum, (for tooth ache.)

R Gallæ pulv., No. 40, four troyounces.	
Pyrethri rad. pulv., No. 40, three troyounces.	
Opii pulveris, half a troyounce.	
Glycerinæ, a troyounce.	
Alcoholis Diluti, a sufficient quantity.	

Mix the powders, moisten the mixture with three fluidounces of the diluted alcohol mixed with the glycerin, and pack in a conical percolator. Then pour on diluted alcohol until a pint of tincture has passed. Evaporate on a water bath to a soft extract and preserve it for use.

This extract has been used for thirty years as an application to painful decaying teeth where the nerve pulp is sufficiently accessible to bring the extract into contact with it. The glycerin has been added more recently to prevent the extract from becoming friable. A solution in which these quantities are present in a pint, odorized with oil of gaultheria, makes a good liquid preparation, applied on cotton. The soft extract is applied by inserting a pellet in the cavity and then a wad of cotton, advising the patient to reject the saliva which freely flows from the action of the pyrethrum on the salivary glands.

Ointment for Hæmorrhoids, by the late Prof. W. R. Fisher.

Take of Sulphate of Morphia,	three grains.
Extract of Stramonium,	thirty "
Olive Oil,	sixty "
Carbonate of Lead,	sixty "
Lard Cerate,	three drachms.

Rub the extract, if not uniformly soft, with a few drops of water; add the powders and olive oil, and rub till perfectly smooth, and then incorporate them with the cerate.

Hufeland's Powder.

Take of Calcined Magnesia,	an ounce and a half.
Powdered Rhubarb,	three drachms.
Powdered White Sugar,	half an ounce.
Oil of Sweet Fennel,	forty-eight drops.

Mix intimately.

Compound Syrup of Wild Cherry.

The following is a cough syrup much prescribed by the late Dr. P. B. Goddard:

Take of Sulphate of Morphia,	two grains.
Oxysulphuret of Antimony (Kermes, U.S.P.)	four grains.
Syrup of Wild Cherry Bark,	four fluidounces.

Rub the powders in a mortar with a little of the syrup until perfectly smooth, and then add the remainder and mix them. The sedative power of this syrup was sometimes increased by adding from two to four grains of cyanide of potassium to the whole mixture, in which case the cyanide should be dissolved in a few drops of water and added to the mixture. The dose is a teaspoonful three or four times a day, and has been useful in many cases.

ON TINCTURA OPII CAMPHORATA.

By J. C. WHARTON, in a note to the Editor.

Dear Sir,—I send you a formula for *paregoric* which can be used to much advantage, and is in my judgment perfectly conformable to the authority of the U. S. Pharmacopœia. The preparation of this tincture by this formula is, in regard to *time*, scarcely more than a matter of *admixture* and *filtration*. A little calculation will show that the ingredients and proportions are precisely the same as in the U. S. Pharmacopœia, save that laudanum is substituted for opium (an allowance being made for the additional diluted alcohol). The magnesia is essential to produce a clear and elegant preparation.

Yours, truly, J. C. WHARTON.

Nashville, July 24, 1869.

Tinctura Opii Camphorata, U. S. P.

- R Laudanum, 6 fluidounces.
Benzoic Acid, 225 grains.
Camphor, in fine powder, 150 grains.
Oil of Anise, 225 minims.
Clarified Honey, 7½ troyounces.
Carbonate of Magnesia, 2 troyounces.
Diluted Alcohol, a sufficient quantity.

Rub the camphor, oil of anise, honey and magnesia together well. Then add by degrees seven pints and two fluidounces of diluted alcohol, rubbing in a mortar till a uniform mixture is obtained. Filter, and after the liquid has ceased to pass add sufficient diluted alcohol through the filter to displace the re-

mainder, or enough to make the filtrate measure* about seven pints and a half. Lastly, add the laudanum and benzoic acid to the filtered liquid, in a bottle, and shake until the acid is dissolved.

ON SYRUP OF CITRIC ACID OF THE PHARMACOPŒIA.

MR. EDITOR:

Sir,—Your earnest request in a late number of the "Journal" for each and all to contribute something for the consideration of the committee of revision for the next edition of the Pharmacopœia, has induced me to offer the following:

In the process for syrup of citric acid of the Pharmacopœia of 1860, it directs to "rub the citric acid and the oil of lemon with a fluidounce of the syrup, then add the mixture to the remainder of the syrup, and dissolve with a gentle heat." This involves the use of a fire,—often not at hand,—also the soiling of capsule and mortar. The capsule ordinarily used in the shops for such purposes being much larger than is necessary, causing the loss of more or less of the material; also in the use of the mortar. Beside this, the time necessary is quite an item.

As a substitute for the officinal manipulation, I would suggest that the citric acid and oil of lemon be rubbed together in a mortar, then added to the required amount of syrup in a bottle in which it is intended to be kept, and well shaken. Set aside; in a short time the citric acid will be found to have entirely dissolved, making a preparation fully equal in appearance to the officinal, and which has the advantage of "being marked for the simplicity and directness of its manipulation."

Yours, &c.,

JOSEPH HARROP.

Leavenworth, Kansas, July 29, 1869.

CRITICAL NOTE ON PERMANGANATE OF POTASSA AS A TEST FOR DISTINGUISHING CHLORINE, BROMINE AND IODINE.

BY GEORGE McDONALD.

In several chemical journals there has recently appeared an

*The variable consistence of the honey will alter the result very slightly.

article on the ready distinction of *chlorine*, *bromine* and *iodine*, by means of *permanganate of potassa*.

As so ready a method of distinguishing between these substances would, if accurate, be of much practical value, I was induced to make a trial of the method for my own satisfaction.

The substances used in my experiments were chloride of sodium, iodide of potassium, and bromide of potassium. Of each of these I made two *neutral* solutions, one of the strength of one part of the respective salts to thirty parts of water, and the other one part to two hundred and forty parts of water. I also made two solutions of permanganate of potassa,—one a saturated solution (1 in 16), and the other quite dilute. The results obtained I give below, under the respective heads of the salt experimented with.

Chloride of sodium.—When a few drops of the saturated solution of permang. potass. is added to the strong *neutral* solution, no immediate change is produced. After a short time, however, the pink color of the solution changes to a *reddish* color, and after the lapse of a day or two to a *brownish* color, and if allowed to stand long enough a *brownish precipitate* is thrown down, and the supernatant liquid becomes clear. These changes are accelerated by the action of heat, or by the addition of a few drops of nitric acid. When the dilute solutions are used no change is apparent, even after the lapse of a day or two, beyond the characteristic pink coloration produced by the permanganate.

Iodide of potassium.—When the saturated solution of potass. permang. is added to the strong solution, a *brownish precipitate* is produced, and the supernatant liquid has a brownish color, with odor of free iodine; but on standing becomes colorless.

The addition of nitric acid to the original solution causes an immediate liberation of iodine.

With the dilute solutions the effects produced are the same, except that no *precipitate* falls until the lapse of a few hours after the addition of the permanganate.

Bromide of potassium.—With the strong solution (of this salt) the saturated solution of permanganate gives a *brownish precipi-*

tate, and the supernatant liquid has a *reddish* color, gradually passing to *brownish*, and, if allowed to stand, becoming perfectly clear.

On acidifying the original solution with nitric acid no change is produced, except at a high temperature when bromine is liberated. If, however, a drop or two of the saturated solution of potass. permang. is added to the acid solution, or the liquid acidified after the addition of potass. permang., bromine is immediately liberated *without* the application of heat. At the same time similar reactions are obtained as when the potass. permang. is added to the neutral solution.

In the dilute *neutral* solution potass. permang. produces no effect; but on the addition of a drop or two of nitric acid the liquid assumes a brownish color, due to the liberation of free bromine.

The *rationale* of these reactions is that the permanganate gives up part of its oxygen to the halogens, converting them into chlorates, iodates or bromates, and brown hydrated dextoxide of manganese is precipitated. At the same time a small quantity of chlorine, iodine or bromine is liberated, the two latter in sufficient quantity to give color to the supernatant liquid even in very dilute solutions. The reactions are of course much more energetic in strong solutions than in dilute ones. In fact, in the case of dilute solution of chloride of sodium it is so slight as not to be discernible.

From the foregoing experiments it will be seen that with *moderately strong* solutions of the three halogens under consideration, the reactions with permang. potass. are so nearly alike in all respects that it would be unsafe to place any confidence in the indications.

The method therefore is only applicable to *very dilute* solutions, and even then care must be taken that the permang. potass. is also in *very dilute* solution, and added *drop by drop*, as any excess beyond what the iodide or bromide would decompose would be apt to give the liquid its own characteristic tint.

Moreover, the method is applicable only to *simple* solutions of *haloid salts*, and its use implies some previous knowledge by the operator, both of the composition and the strength of the solu-

tion under examination. In a compound solution of a chloride and an iodide this test *per se* would be of but little use, as only the presence of the iodide would be indicated, and recourse to other methods would be necessary for the detection of the chloride.

In a solution containing no haloid salt whatever, as, for example, a solution of a nitrate or a sulphate, this test would indicate the presence of a chloride,—that is, no change would be produced on the addition of the permanganate. And in a solution containing organic matter the test would in many instances be rendered worthless, as the permanganate is readily decomposed by such substances with changes very similar to those produced by the action of iodides or bromides.

Cairo, Ill., July 26, 1869.

THE TRUMPET PLANT.

(See July number of this Journal, page 292.)

MONTICELLO, FLA., July 29, 1869.

Editor American Journal of Pharmacy:

Dear Sir,—The trumpet plant known among us is the *Sarracenia flava*. It is a very peculiar plant, resembling somewhat a small straight horn. The upper and larger extremity is partially covered with a spotted hood. The flower is of a greenish yellow color. It grows in abundance throughout this section of the State.

Respectfully,

J. DABNEY PALMER.

DARBY'S PROPHYLACTIC FLUID.

The following note, received from the proprietors of this preparation, purports to give the exact composition of the "fluid." The writers evidently mean the composition of the solid contents of the liquid. As they refrain from giving either the proportion of saline matter or the process of making it, they evidently do not intend to make their communication useful to the readers except as abstract information:

OFFICE JOHN DARBY & Co., 161 William St., New York.

Editor American Journal of Pharmacy:

Dear Sir,—We herewith send you the formula, giving exact composition of Darby's Prophylactic Fluid, an article we are introducing as a disinfectant and therapeutic agent, and respectfully request you to lay it before the profession through the columns of your paper:

Hypochlorite of Potassa,	30 per cent.,
Pernanganate of Potassa (or Soda),	10 "
Bicarbonate of Potassa,	33 "
Chloride of Potassium,	25 "
Biborate of Soda,	02 "

The chlorine and permanganic acid are the only active agents; the other materials modify the action, and remove by their detergent properties all eliminated materials.

Very respectfully,

JOHN DARBY & Co.

In publishing the note of Messrs. John Darby & Co. we desire to make it useful, if it possesses any merit, and therefore hazard the following opinion of its *modus præparandi*: We believe it to be a solution of hypochlorite of potassa, parallel with the Liquor Sodæ Chlorata of the British Pharmacopœia, or of the original "Labarraque's solution of chloride of soda," in which carbonate of potassa is used instead of carbonate of soda, mixed with a solution of permanganate of potassa and borax. Our reason for this is based solely upon the statement of the note that it contains Bi-carbonate of potassa, as we have not examined the "fluid." If made from chloride of lime by the U. S. P. process for solution of chlorinated soda, the carbonated alkali would not be bicarbonate, but carbonate of potassa. By carefully evaporating the "fluid" to dryness its solid content could be ascertained, and then it is not difficult to fix the proportions of permanganate and baborate. The article on page 393, by Mr. McDonald, has some bearing on this subject, but with quite a different object. If this mixture of these disinfectants should prove useful, it is probable that a similar mixture of Solution of Chlorinated Soda and Permanganate of Potassa would act quite as well, and might be prescribed extemporaneously by the physician; and, if sufficiently permanent, be adopted in the U. S. Pharmacopœia.—ED. AM. JOUR. PHARM.

CASTOR OIL AND GLYCERIN POMATUM.

By THE EDITOR.

A correspondent says: "You would oblige the pharmacutists of Philadelphia by giving a formula for castor oil and glycerin pomade, so that every one can make it, in your next number."

The Editor is disposed to comply with this request, though he thinks there are many of his readers who have recipes as good, or perhaps better than the one he now communicates:

Castor Oil and Glycerin Pomatum.

Take of White Wax, an ounce and a half,
Glycerin, pure, two fluidounces,
Castor Oil, twelve ounces,
Oil of Lemon, five drachms,
Oil of Bergamot, two drachms,
Oil of Lavender, one drachm,
Oil of Cloves, ten drops,
Annatto, ten grains,
Alcohol and Water, a sufficient quantity.

By a moderate heat dissolve the wax in a small portion of the castor oil (one-fourth), and triturate it with the remainder of the oil and the glycerin till it is quite cool; then add volatile oils. Lastly, rub the annatto with a drachm of water till smoothly suspended, add a drachm of alcohol, and stir the coloring into the pomade until it is thoroughly mixed.

It is quite necessary to use the blandest castor oil, and to heat it as little as possible, to avoid the ricinic odor which excessive heat develops in castor oil.

ON PHARMACY IN THE UNITED STATES.

(Read at the Session of the Central Stelle fuer Gewerbe and Handel at Stuttgart.)

By JOHN FABER, late of New York.

The task being allotted to me to describe the present state of Pharmacy in the United States, I must, before entering upon

my subject, draw your attention to the fact that, up to the present moment, there exist no special laws regulating the drug-business, as it forms a part of the general free trade; that, consequently, there is no governmental supervision nor any authorized tariff.

Several States, among which is the State of New York, in their Legislatures, have provided special laws for that purpose, in order to prevent others than qualified persons to embark in that responsible business. The legal requirements for the opening of a retail drug store consisted in the following:—

An apprenticeship of four years with a druggist having a diploma either from Europe or from one of the Colleges of the United States; two seasons of lectures in one of the Colleges of Pharmacy, and a diploma of the same. This was all that was requisite to entitle him to the right of establishing himself wherever he thought proper; because, in case of ill success, nobody else than himself would suffer by his losing the capital invested in his undertaking.

By force of that law, the College of Pharmacy in New York, in the year of 1830, after having repeatedly fined, caused a number of establishments (the owners of which could not prove their legal qualification) to be closed. But they appealed to the Supreme Court of the United States, which declared this law unconstitutional, it being not in accordance with the general freedom of trade, as sanctioned by the Constitution of the United States.

On the strength of that decision, those that were thus interrupted in their business commenced an action against the College of Pharmacy of New York, which had to pay such heavy damages, that it took that institution over fifteen years to recover from it.

This state will, therefore, continue until corrected by legislation of the Congress of the United States, for which purpose more claims are constantly arising among Pharmacutists and the public in general.

A special law is wanted for this business—that is, *the proof of qualification for its duties*—while nobody claims a special protection or privilege for it.

Certainly the question arises: How can a drug-store be managed conscientiously and scientifically without inspection by the authorities?

This question is easy to be answered; but, in order to draw a parallel between the United States and Germany, I find it necessary to enlarge upon the subject by stating that, in the United States, there are at least four drug stores to one in Germany.

The next question immediately will be this: Where one drug-store hardly can make a living, how is it possible that four of them can exist without resorting to dishonorable means?

But have we not in Germany numbers of drug-stores which are allowed to connect other articles with their establishments, such as the sale of spices, sugar, coffee, tea, &c.?

I always bear a kind remembrance of my apprenticeship in Germany. I had the good fortune to find a principal who possessed a warm scientific zeal, to whom I still gratefully owe my lively interest in our profession.

He bought himself an establishment, to which was attached a considerable trade in groceries, spices, &c., in a small country place. I dare fairly say that full one-half of our sales were from these articles. But, at the same time, I enjoyed the most thorough theoretical and practical instruction. It is not too much said when I assert that all officinal, chemical and pharmaceutical preparations, with the exception of the few that were allowed by the Pharmacopœia to be purchased, were prepared in our laboratory.

At the same time, the dispensing department was conducted with the most scrupulous exactness. Our establishment enjoyed a wide-spread reputation, and it frequently occurred that prescriptions from other places and considerable distances found their way to us.

Had my principal and tutor been restrained only to the strict, legitimate retail sales and prescriptions, he would not have had the means to answer to all his responsible requirements so well in keeping up his perishable stock in a fresh state, much less to pay the interest on his capital if he had needed it.

By this example, I try to explain how so many druggists can exist in the United States.

I have had occasion to notice, since my return to Germany, that many changes have taken place in the management of pharmacies. Gradually there appear to be kept, particularly in larger cities, a number of retail articles, as foreign patent medicines and toilet preparations. They are called for, their sale is quickly made, and does not disturb the legitimate business much.

Just so, but in a more extended measure, the numerous retail drug-stores in the United States find their living; and it depends upon the qualification, the conscientiousness and the management of their owners, whether they obtain a reputation as thorough apothecaries, as venders of drugs, or as simple dealers in patent medicines, among the public and physicians, each class of which select their pharmacies with the strictest scrutiny.

In the United States, the free competition takes the place of inspection by authority. This is admitted by all the German pharmacutists there; for the public exercises a never-relaxing control, which extends even to the most indifferent articles. In order to explain this, I find it necessary to enter more into that subject. In the first place, the public refuses to take any article without being properly labelled, with the name of the firm and the name of the drug upon it. A druggist who sells an inferior quality of rhubarb, stale camomile, a rancid salve, or a spoiled, fermenting syrup, will be known very quickly, and the public will desert him, because it will find another drug-store, not far distant, where it can get these articles more carefully kept, or in a fresher state.

If he attempts, in putting up prescriptions where dear preparations are ordered, for the sake of gain, or in order to sell cheaper than his competitors, to commit fraud by not dispensing the prescribed quantity, the practising physician will immediately become suspicious by being disappointed in the expected effect on his patient, and the prescription will be put up for the future in a more reliable establishment. All this the apothecary in the United States is well aware of; and, for this reason, every one, for the sake of competition, makes his utmost effort to attend to his business promptly and conscientiously, and to furnish the best of quality at most possible moderate rates.

That the position of the apothecary, under these circumstances, is a very burdensome one cannot be denied. I am well aware of the current opinion that everything is kept in American retail drug-stores that promises a return of profit—even from brooms down to axle-grease.

It is quite true that there is no law that forbids the apothecary to keep anything that promises a good sale, and there may be a few stray establishments where you can find these articles; still, these are exceptions, not the rule. Their owners do not aspire to the title of apothecaries, and they are conscientious enough either to confine themselves to the selling of drugs, or to separate the dispensing department from it, and to employ competent apothecaries for this purpose.

But I can remember, from former times, many an establishment in Germany, where articles such as *shoe-blackings, inks, varnishes and cordials* were largely manufactured, while, at the same time, the dispensing department was conducted with the most conscientious accuracy. In general, the gratifying fact is to be noticed in the United States, that, in proportion as the scientific attainments of the apothecary improve, he awakes more to the feeling that his profession ranks above ordinary business, that the confidence of the public is his sole support, and that he becomes constantly more aware of his responsible position. It will not be long before the several States will enact laws, requiring a proof of scientific qualification of those that want to practise pharmacy.

Until now the pharmacutists, in their own specific interest, have taken the scientific improvement and the elevation of their professional standing into their own hands. Numerous associations have formed all over the land, constituting themselves as Colleges of Pharmacy, obtaining charters (*i. e.*, corporation rights) from the Government. Some of the colleges have scientific journals, and have regular meetings in which questions of scientific and common business interest are discussed. They are bound by laws to open a course of scientific instruction. They hold usually winter courses of lectures upon different branches of pharmaceutical science, according to their means. The older and more prosperous colleges entertain pharmaceutical

laboratories. There are, at present, about twelve such colleges and societies in the United States, besides the great American Pharmaceutical Association.

The most perfect institution, in this respect, is the Philadelphia College of Pharmacy. It employs, for all its branches, competent professors, has complete collections and a well-fitted laboratory. The lectures, generally, are held evenings, so as to facilitate the attendance of the clerks to them. Among the students, there are to be found, besides apprentices and clerks, owners of drug-stores, who go there to improve their insufficient knowledge. The druggist who can show that he has attended the courses of lectures in one of these colleges, and is in possession of its diploma, will always unfailingly enjoy the preference of practising physicians and the public at large.

The existence of so many drug-stores is principally secured by the sale of sundry retail articles and pharmaceutical preparations. The profits derived from these sales furnish to the poor apothecary the means to dispense good medicines by procuring them in good quality, and keeping a fresh and select stock of medicines, and to throw away stale ones. It is proverbial there, even among the German pharmacutists, that nothing is more imprudent than to sell old or spoiled drugs. There is no such thing as a uniform, legal tariff. The price of medicines is always regulated by local circumstances, and the financial circumstances of the patrons of an establishment. But there is sufficient competition in the business to warrant against exorbitant prices. Establishments which enjoy a large reputation, and are more elegantly fitted up, generally obtain better prices, and become patronized by the rich, while people in ordinary circumstances can find drug-stores at moderate prices.

As there is no privilege attached to that business, the price of retail drug-stores, consequently, is very varying. Reputed establishments that enjoy a large patronage will realize much more than such as cannot prove this advantage. It often happens that retail drug-stores are sold below their inventory value, because their owners are either incompetent or did not apply themselves to business.

As the government does not exercise a control over the drug

stores, and as it is well known to the public at large that among many capable and conscientious apothecaries there are many unqualified ones, or, even qualified, but unscrupulous and rapacious ones, it is very careful in the selection of a retail drug store. A mistake in the retail trade, such as giving camomile instead of elder flowers, is sufficient to hurt the credit of an establishment in its neighborhood, for the public calculates that, if a mistake can be committed in the retail article in a place, it might just as well occur in putting up prescriptions, and will look to a more reliable establishment for its prescriptions.

But in cases where life or health are endangered, the injured party may appeal to the protection of the law, which sometimes is followed by the ruin of the apothecary; he loses the confidence and patronage bestowed upon him; and I have had occasion to witness that establishments were sold far below their real value for a similar reason.

For the protection of the public against the careless sale of poisons, some of the States have made special laws regulating the sale of poisons. Poison books, in which every sale of poison is to be registered, are to be kept in drug stores. Every sale is to be witnessed by a person known to the druggist. The name of the poison, name and residence of the buyer, quantity and intended use of the poison, are to be properly specified in it. Omission of this rule, if any complaint is made, is subjected to a fine of \$50 in the first, and increased fines in repeated cases.

Nuremberg, Bavaria, June, 1869.

FORMULÆ FOR NEW PREPARATIONS.

(Selected from foreign journals.)

Collodium tannatum.—The hæmostatic effect of collodion is increased by the following preparation: Collodion 100, carbolic acid 10, tannin 5, benzoic acid 3 parts.—*Sweitzer. Wochenschr.*, 1869, No. 1, from *Giornale di farmacia*.

Indelible Ink.—Kuhr recommends the following as black and durable: The mordant is made of 1 hypophosphite of soda, 2 gum-arabic and 16 parts distilled water; the ink is composed of

1 part of nitrate of silver, 6 mucilage of gum, and 6 parts distilled water.—*Ibid.*, No. 2, from *Chem. Techn. Repert.*

Spiritus Formicarum.—Instead of distilling it from ants, the following formula is proposed in *N. Jahrb. f. Pharm.*: Acid. formic. conc. 3ss, alcohol. dil. (sp. gr. .90) lb. i. Hager's Manual directs: Acid. formic. (containing 25 per cent. anhydrous acid) 4 parts, æther. acet. p. $\frac{1}{2}$, alcohol., sp. gr. .835, alcohol., sp. gr. .900, each 8 parts.—*Ibid.*, No. 15.

Remedy for Carious Teeth.—Nitric ether and sulphate of alumina are mixed so as to form a paste, which is applied to the cavity. It never occasions any inconvenience, the most violent tooth-ache is promptly relieved, and, after several applications, the affected tooth becomes insensible.—*Ibid.*, No. 20, from *Jour. de Chim. Méd.*

Hydrated Silicate of Magnesia is prepared by precipitating a warm dilute solution of Epsom salt with a solution of soluble glass, entirely free from lead, until it ceases to produce a precipitate, which is washed and dried. It forms a soft, light, tasteless powder, which has been used with great success, by Dr. Garraud and others, as a substitute for bismuth in epidemic cholera diarrhoea. Dose, 5 to 10 grammes with gum-water.—*N. Jahrbuch f. Pharm.*, April, 1869, 224, from *Pharm. Centr. Halle*, 1869, 10.

Solution of Acetate of Alumina, which is considerably used in some parts of Germany as a gargle in sore throat, wash for wounds and for scorbutic gums, is, according to Hager, obtained free from lead by precipitating a solution of 80 parts sugar of lead in 240 water, by a solution of 50 parts ammonia alum and 10 sulphate of soda in 400 hot water; after setting aside for twenty-four hours in a cool place, (5 to 10° C.,) the liquid portion is passed through a filter. If a pure potassa alum is used, its quantity must be increased to about 53 parts. The preparation is best made in winter. It contains 3 per cent. $\text{Al}_2\text{O}_3, 3\text{Ac}$, and has, at 17.5° C., a specific gravity = 1.021 to 1.023.—*Ibid.*, 235, from *Ibid.*, 2.

Iodated Milk contains iodine so intimately combined that it cannot be detected by the taste, smell, or color. It was first

recommended as a medicine by Duroy. Hager regards it as the mildest preparation of iodine, and states that about 5 parts of iodine, in this combination, must be given, to have the effect of 1 part of iodine in substance. He took milk containing .25 grammes iodine at one dose, without any unpleasant effects. The iodated milk may be preserved for over a week without spoiling; the cream separates, but is readily mixed by agitation. The following formula is proposed: Best cow's milk, 90 grammes, is warmed slightly in a glass or porcelain vessel; a solution of 1 grm. iodine in 10 grm. alcohol is then gradually added and mixed with agitation until the white color of milk reappears. A small dessert-spoonful contains about 5 centigram. iodine.—*Ibid.*, 235, 236, from *Ibid.*

Extractum Ergotæ, for subcutaneous injections, is, according to Langenbeck, made as follows: Extr. ergotæ, 2.5 p.; alcohol., 90 sp. gr., glycerin, of each, 7.5 p.—*Ibid.*, 234, from *Apoth. Zeitung*, 1869, 50.

ON TINCTURA OPII.

By J. B. MOORE.

The directions of the U. S. P. for the preparation of this tincture are as follows:

“Macerate the opium with the water for three days, with frequent agitation; then add the alcohol and continue the maceration for three days longer. Introduce the mixture into a percolator, and, when the liquid has ceased to pass, pour diluted alcohol upon it until two pints of tincture are obtained.” To complete this process requires about a week, and to secure the full benefit of the maceration, it is essential that the directions to agitate frequently be complied with, especially as the opium is in powder, which is troublesome during so long a period, and which, unless in very careful hands, is likely to be partially if not entirely neglected.

I have for some time been in the habit of departing from the officinal directions in the preparation of this tincture, having

adopted a somewhat different process, the formula of which I give below for the benefit of those who wish to try it. I have always found it, when carefully worked, to thoroughly exhaust the opium and to yield an efficient and reliable product, equal, I think, in every respect to that of the U. S. P., and it possesses the merit of greatly abbreviating the time required for its fulfillment, which is important in all of the operations of the laboratory, especially when it can be accomplished without, in any particular, vitiating or impairing the quality of the product.

R Pulv. opii, No. 50, ℥iiss, troy.
Hot water, temp. 200°,
Alcohol, aa one pint.
Diluted alcohol, q. s.

Macerate the powdered opium in a covered vessel, with frequent stirring, until the mixture cools; then transfer it to a stoppered bottle and continue the maceration for twelve hours, with occasional agitation; then strain the infusion through muslin with strong expression. Macerate the residuum with the alcohol in a stoppered bottle for twelve hours, shaking frequently, then strain and express. Mix the infusions, and upon the dregs carefully packed in a small cylindrical glass percolator gradually pour the mixture, and when it has all passed from the surface, continue the percolation with diluted alcohol until two pints of tincture are obtained.

It will be found advantageous to rub the dregs through a sieve of about eighteen meshes to the inch, preparatory to packing in the percolator, as it reduces them to a good condition for packing.

Digestion at a temperature of 100 or 120° F. may be substituted for maceration if deemed advisable, although I have never found that necessary.

The advantages gained by the maceration of the opium in the 85 per cent. alcohol in the above process, is the solution and removal of the greater portion, if not all, of the caoutchouc-like substance and other principles which impede and render the percolation of opium so difficult and unsatisfactory. After the opium has been macerated in the alcohol and expressed, the dregs will be found

to be quite mobile, having lost that adhesiveness which they continue to retain after being treated with *diluted alcohol*.

To those who wish to use the lump opium, which I presume is the form in which the drug is most generally employed for making the tincture, I would recommend the following mode of treatment :

Cut the opium into small pieces, pour upon it, in a pan, the hot water, work and knead it well with the hands, until it is thoroughly disintegrated and softened, then macerate and express as directed in the formula above. Pour upon the residue the alcohol, and having worked it with the hands for a few minutes, transfer the mixture to a bottle and continue the maceration, and finish the process as directed above.

The outer portions of lump opium are usually dry and hard, which yield and soften with much difficulty, even when immersed for a considerable length of time in hot water. Therefore, in making the tincture, if after kneading the opium well with the hands there should still remain any hard and unbroken portions, the whole should be collected in the hand and expressed, then beat well in a mortar until all lumps are broken down and the mass becomes uniform.

Making the tincture from undried lump opium is of doubtful propriety, and by some may be considered an unwarrantable departure from the Pharmacopœia. But it is nevertheless done, and, as far as I can learn, I believe it is the usual practice of a great majority of apothecaries. Of course all conscientious pharmacists make due allowance, as nearly as they can approximate, for the moisture usually present in opium, which, however, is very variable, as the drug is found in the market. This plan, although it might be admissible without serious detriment, when the tincture is intended for the ordinary retail sales, but when designed for *prescription purposes* it could not be tolerated, for it is impossible, without drying, to ascertain precisely the amount of water contained in any sample of opium. The tincture would therefore be of uncertain strength, the uniformity of which is so essential in so potent, useful and important a preparation as this.

PHILADELPHIA, August, 1869.

PEROXIDE OF HYDROGEN, THE NEW REMEDY FOR DIABETES.

By C. GILBERT WHEELER, Ph. D.

Within the last few months several notices have appeared in the medical journals of Europe, and the eastern portion of our own country, with regard to the employment of peroxide of hydrogen in the treatment of diabetic patients. Remarkable success seems to have accompanied its use to such an extent as to awaken a very considerable interest among medical men with regard to this hitherto little known compound. At the recent annual meeting in this city of the State Medical Association, this remedy was brought to the notice of that body by Dr. N. S. Davis, in the able report of the committee on drugs and medicines. This report will be found in the *Chicago Medical Examiner* for the present month.

The circumstance then of its coming before the public, as thus stated, and likely soon to be an article not unfrequently prescribed, makes it appropriate that the nature and properties of the substance should be more generally and fully known, especially as our ordinary text-books on chemistry and pharmacy contain very little with regard to it. Although peroxide of hydrogen has not been studied by chemists as fully as many other compounds, yet much is to be met with in chemical journals, especially those of Germany and France, which has not as yet found its way into American scientific literature.

Peroxide of hydrogen, binoxide or deutoxide of hydrogen, hydric peroxide and oxygenated water, are synonyms for a compound of two atoms of hydrogen with two of oxygen, or of two parts by weight of the former with thirty-two of the latter, and having the formula, $H_2 O_2$; water being $H_2 O$, or the formula $H O$, according to the antiquated dualistic nomenclature. It was discovered in 1818 by Thenard, an eminent French chemist.* Has never been prepared direct from its elements, nor obtained perfectly pure, but always in an aqueous solution, the most concentrated having a specific gravity of 1.452. According to Schoenbein, it results from various chemical reactions, but soon spontaneously decomposes. It is formed when the peroxides of

* *Annual de Chimie et Phys.* [2] vol. viii, p. 306.

barium, strontium, calcium, potassium or sodium are decomposed with acids. It forms during the electrolysis of water acidulated with sulphuric acid, also in many instances where slow oxidation is in progress, and under conditions such as give rise at the same time to the formation of ozone, as for instance during the oxidation of phosphorus in moist air.

Schoenbein believes that in this case the oxygen of the air is transformed into ozone and antozone, its electrical opposite, and this latter then combines with the water present to form peroxide of hydrogen. In the familiar method of exhibiting the formation of ozone by heating platinum in a vessel of air containing also a small quantity of water and ether, there is formed an appreciable quantity of peroxide of hydrogen along with ozone. Some chemists believe that in all cases where oxidation takes place in moist air, more or less peroxide of hydrogen is formed, as in the rusting of metals, the decay of organic substances, or the respiration of animals,* and that in these processes it plays an important part.

Notwithstanding the many possible methods of forming the peroxide, only those are practically useful based upon the decomposition of barium peroxide by means of an acid in presence of water.

In the original method of Thenard, hydrochloric acid was employed. But the purification and concentration is by his method very difficult and circumstantial. Pelouze employed hydrofluoric acid, also hydrofluosilic acid. But by far the most satisfactory method is that of Balard, as modified by Duprey.† A very rapid current of pure carbonic acid is passed through distilled water, and peroxide of barium added in small quantities, care being taken to have the acid always in excess. After filtration the solution is concentrated under the receiver of an air pump. A very dilute solution of the peroxide may also be obtained in the following manner, which for experimental purpose is an excellent method, and admits of execution sufficiently rapid to be suited for the lecture table: a small amount of the peroxide of potassium is prepared by melting the metal in a test tube, and

* See interesting article on, in Erdman's Journal, vol. 89, p. 323.

† Compt. Rendus, i, 55, p. 736.

passing for a few minutes a current of oxygen through the same the peroxide is then added, in small quantities, to an aqueous solution of tartaric acid, and the filtrate will be found to contain a sufficient quantity of the peroxide of hydrogen for the usual tests.

Peroxide of hydrogen, when in the most concentrated aqueous solution, is a colorless, transparent liquid; it has never yet been frozen, and is less volatile than water. Concentrated solutions are strongly bleaching in their action on coloring matters, have a bitter taste, act on the skin, causing it to become white and give rise to itching sensation. Such solutions rapidly decompose, especially on heating. Dilute solutions will keep for months at ordinary temperature. The peroxide is slightly soluble in ether, and this solution is the remedy recently brought before the public as "ozonic ether," and is used in similar cases as the aqueous solution, and in doses of from 10 to 30 minims three to four times a day in water.

Peroxide of hydrogen is an active oxydising body, and doubtless its efficiency in diabetes depends on this circumstance. Dr. Richardson proposes to use it as a substitute for iodine and mercury in constitutional forms of scrofula and syphilis. The strength of the solution is such that the peroxide on decomposition should yield a volume of oxygen ten times as great as the volume of the solvent.

There are numerous good tests for the peroxide. Two of the most delicate are the following: I. To a freshly prepared starch solution add iodide of potassium, then the peroxide, and finally a solution of sulphate of iron; a blue color at once appears. II. A slightly acid solution of permanganate of potassa is at once decolorized.

This latter test may serve as the basis of a quantitative test, by using a solution of the permanganate of known strength, and thus the practical pharmacist has a means at hand of readily testing the relative strength of his solution of the peroxide from week to week, with a view of establishing the proper dose. This, for an aqueous solution of the strength above given, is one to four fluidrachms repeated three times a day.

CHICAGO, July, 1869.

—*The Pharmacist, Chicago, July, 1869.*

FILTRATION UNDER PRESSURE.

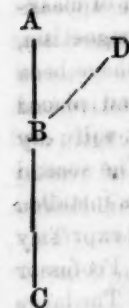
BY GUSTAVUS HINRICHS.

Professor R. Bunsen, of Heidelberg, has recently devised a very excellent improvement in the tedious but all important operation of filtration. This new method may easily be applied whenever a supply of water and a good fall of from 10 to 30 feet are at disposal. In all towns with water works and drains it is easy to put this method into practice; the saving of time is enormous, for Bunsen finished a washing of chromium hydrate in 13 minutes, while, according to the old process, 7 hours were required, representing a saving of 97 per cent. of time. This method will evidently be of great use to the pharmacist.

Bunsen proved that the rapidity of filtration is very nearly proportional to the pressure under which it is effected. In the old way, when filtration is performed in the atmosphere, the pressure is but very small. The new method consists in receiving the filtrate in a partial vacuum, so that filtration takes place under a pressure more or less nearly equal to that of the atmosphere—30 to 34 feet, instead of a few inches of water.

For this purpose two things are necessary, a strengthening of the filterer and the production of a vacuum.

For the latter purpose air pumps are applicable; the vapor of water, and especially the corrosive vapors of acid, would soon deteriorate the machine. The vacuum is easiest produced by means of a stream of water flowing down a vertical tube ABC, which latter is connected with the receiver by a tube BD, which, at an acute angle, enters the main tube ABC. If the tube BC be passed through one or two stories and connected below with a drain, a very effective filtration under pressure will be possible. Even a fall of 8 feet is already quite effective.



The receiver D consists of a strong glass vessel to receive the filtrate, closed air tight by means of a good stopper (best of rubber) through which the funnel and a glass tube pass, likewise air tight. The glass tube is connected with the tube DB by means of a stout rubber tube. In the very accurate funnel is a circular

and *very thin* piece of platinum foil, slit up along one of its radii, and folded exactly like a smooth filter; this platinum foil filter serves to enable the paper filter to sustain the pressure, but does not hinder the filtration. The circular plate of platinum is from 2 to 3 centimetres (1 to 1½ inches) in diameter.

The operation of this apparatus will now readily be understood. As soon as the water falls down the tube ABC, air is borne along between the drops (as in the old catalonian bellows). If the apparatus is tight, the air can only come from the receiver, which therefore rapidly will be evacuated, so that the pressure of the atmosphere being no longer balanced from inside of the receiver, will force the liquid rapidly through the filter.—*The Pharmacist, Chicago, July, 1869.*

ECOLE PRATIQUE DES HAUTES ETUDES, PARIS.

The new school and the laboratories at the Sorbonne, which have been fully described in the *Journal of the Society of Arts*, were expected to be opened in the course of January. M. Milne-Edwards, Dean of the Faculty of Sciences, has recently made a report to the Academic Council of Paris upon the progress, with one important change, made in the arrangements for the new high school and laboratories. The faculty already is in possession of two physical laboratories, one for instruction under Professor Desains, in which candidates for the degrees of Licentiate or Doctor may learn the management of instruments of precision, and exercise their faculties in the repetition of classical experiments relative to heat, light, electricity, magnetism, and acoustics. The rooms set apart for this purpose have been found in three old houses, close to the Sorbonne, and placed temporarily at the disposition of the faculty, and they will very shortly be opened four times a week to the pupils. The second physical laboratory is for scientific investigation, and is installed in a new building erected by the municipal authorities expressly for the purpose; this is under the direction of Professor Jamin, and was opened in the middle of last summer. The large chemical laboratory, under the direction of M. Sainte-Claire Deville, assisted by M. Schulzenberger, was to be opened early in

the present year. The practical study of mineralogy is to be carried on in the study of M. Delafosse, once a week at first, but afterwards twice if necessary. There are provided two geological laboratories, both under the charge of Professor Hebert, and to be opened twice a week. The study of botany is to be divided between the Sorbonne and the Museum of Natural History at the Jardin des Plantes; the laboratory of the faculty, directed by Professor Duchartre, to be devoted to dissection, microscopic examination and analysis. A new arrangement has been made with respect to the study of comparative anatomy, which will be divided between the Jardin des Plantes, the College de France, and the Sorbonne, the dissection of animals being studied at the first of these establishments. With respect to experimental physiology, a laboratory is now being arranged by M. Claude Bernard, but on a scale much too small for the purpose, but which will doubtless soon be enlarged. Lastly, says M. Edwards, the faculty intends to complete its arrangements by the opening of a reading room, in which the students of the new high school may consult the various scientific periodicals, and make use of the time that will necessarily elapse between the lessons; for this useful object the professors have given up their common room until a new one can be provided. It is quite evident that the Minister of Education and the learned Dean of the Faculty are determined to carry out the intentions of the government with vigor, and it would be the fault of the young men themselves who are devoted to scientific pursuits if they do not make progress, not only in educational, but in original investigation. The professors are the most celebrated in France, and means provided are such as no university in the world offers for high scientific study. It will be strange indeed if a field so well prepared, and in such good hands, should fail to be fruitful.—*The Druggist, London, April 10, 1869, from Chem. News.*

ACTION OF CARBOLIC ACID ON REPTILES.

We have been favored with extracts from an account of some very valuable experiments made by J. Fayrer, F.R.S.E., C.S.I.,

&c., on the value of carbolic acid in preventing the entry of serpents into dwellings, from which we find that a few drops of the acid are sufficient to quickly kill full-grown cobras and other poisonous snakes. Dr. Fayrer is continuing his experiments on the merits of carbolic acid as a therapeutic agent in snake bite, and, in the meantime, he suggests its use as a preventive against the entry of snakes into houses, &c. Dr. Calvert informs us that it is probable that the acid will save life by applying it, in a caustic state, to the wound caused by the bite of a serpent, and more satisfactory results will be obtained by following the method first put into practice by Dr. Tessier in the Mauritius, for the cure of a virulent intermittent fever. In this case, by injecting under the skin a solution of three-quarters of a grain of carbolic acid dissolved in 20 minims of water, the patients were rapidly cured, and the spread of the pestilence arrested.—*Lond. Chem. News, July 30, 1869.*

ON A NEW PREPARATION OF LUPULIN.

By DYCE DUCKWORTH, M.D.

Medical Tutor, St. Bartholomew's Hospital.

The author, after alluding to the general use made of Lupulin in the United States, and its neglect in Great Britain, says:

The preparations in the United States codex are arranged with due regard to this point, and in recommending these to more careful notice in England, I should have little or nothing to add, were it not that I believe I have observed the fact that the aromatic spirit of ammonia is a better solvent of this substance than any other yet proposed. The American tincture and fluid extract are prepared with rectified spirit, and the oleo-resin, as in the case of *Filix-mas*, is procured by means of æther. The two former turn milky on the addition of water, and, what is more noteworthy, cast off the resin they hold in solution, which appears as a film on the surface of the mixture. This resin I find cannot be taken up again by adding excess of alkalies, such as liquor potassæ, bicarbonate of soda, or aromatic spirit of ammonia. If, however, either of these preparations be put into a dry vessel, and about an equal bulk of spiritus ammoniæ aro-

maticæ is mixed with it, and water subsequently be added, a good solution is formed, pleasant-looking, though not quite clear. I have devised another preparation which, I think will prove most useful whenever it is desired to use the hop. It is an ammoniated tincture, and should be made in the same way as the other ammoniated tinctures of the Pharmacopœia. Like valerian, which also contains an oil and a resin, lupulin is best exhausted by the aromatic spirit of ammonia, and the reason for this appears to be that this preparation contains the combination of alkali and rectified spirit necessary to the solution of the various elements in these drugs. Certainly no agent that I have tried extracts the virtues of lupulin so well as sal-volatile. The result is a strong richly-colored tincture. Neither rectified spirit, æther, nor, of course, proof spirit produce so strong a preparation.* I recommend the following formula:—Lupulin, 2 oz., spir. ammon. arom., a pint: macerate for seven days, agitating occasionally, then filter and add sufficient menstruum to make up to a pint.† The dose of this is from ℥ 20 to fl. 3j. I propose to call it “tinctura lupulinæ ammoniata.”

I have no hesitation in directing attention to this preparation of the hop as the best we at present possess. According to Christison, the dose of tinctura lupuli should be fl. 3j. to fl. ʒiiss to produce any hypnotic effect; the ordinary dose consists of as many drachms. Dr. Ives, of New York, states that the tincture of lupulin is an effectual hypnotic in restlessness, the result of nervous irritability, and in delirium tremens.‡ Some advantage too, is derived from the presence of ammonia in considerable quantity, and this whether the preparation be exhibited as a hypnotic, or as a tonic combination of bitter and ammonia.—*Pharm. Journ., London, Oct., 1868.*

* According to Royle, the active properties of lupulin are completely extracted by spirit. I am inclined to doubt this. He recommends a tincture of it, however, in preference to tinct. lupuli.

† A specimen of it was exhibited in the Annual Museum of the British Medical Association at Oxford, in August last. Mr. Hall, of Wigmore Street, who made this for me, recommends that percolation should not be employed.

‡ *Vide American Codex, also Nevins' Transl. of Lond. Pharm. 1851.*

GLEANINGS FROM GERMAN JOURNALS.

By JOHN M. MAISCH.

Copalchi Bark.—Dr. F. Mauch, Jr., found copalchi bark of commerce to be mixed with not less than 20 per cent. of other barks, mainly cinchonas (China *Tecamez* and China *Nova Surinamensis*). The carefully picked bark contained of important proximate principles 4.15 per cent. resin soluble in ether, 3.27 resin soluble in alcohol, 1.52 to 2 per cent. copalchin, a neutral bitter principle, .15 volatile oil, 3.5 protein compound and oxalic acid. The alkaloid of J. Howard could not be found, and is referred by the author to the admixture of cinchona, as stated before.—*Wittstein's Viertel. Schr.*, 1869, 161—174.

Cupido Bark of Venezuela.—Dr. F. Mauch, Jr., met with a bark under this name, which, by comparing it with the barks from Chili at the Paris Exposition, he pronounced identical with the bark of *Drimys chilensis*, De C. The author obtained 5.3 per cent. soft acid resin, .42 volatile oil, composition $C_{20}H_{16}$, .61 tannin turning iron salts green, 4.32 phlobaphen (red product of decomposition of the tannin), 6.2 per cent. protein compound and starch, citric and oxalic acids.—*Ibid.*, 174—183.

Mercurialina.—E. Reichardt has again investigated the volatile alkaloid obtained by him in 1863 from *Mercurialis annua* and *perennis*. Its formula, C_2H_5N , is identical with methylamina, but some of its properties, and particularly the behaviour of several salts, are sufficiently distinct from methylamina to entitle the former, for the present, to a distinct name.—*Ibid.*, 222—230.

Sinapism.—Wittstein manipulates as follows to obtain the sinapism recommended in 1868 by Lebaigue: one part yellow mustard, from which the fixed oil has been expressed, is digested in four parts of water for two hours at a temperature not exceeding 40° C., thrown upon a filter, and washed with four parts of water; printing paper is steeped in the filtrate, dried at ordinary temperature, marked with A, myrosin, and preserved in a dry place.

One part black mustard, freed from the fixed oil by pressure, is added in small quantities to four parts boiling water, the boil-

ing is continued for a few minutes, the mass diluted with four parts water, and filtered; the filtrate is used for saturating printing paper. This is dried and preserved as before, and marked B, myronic acid.

To prepare a sinapism, equal-sized pieces are cut from A and B, one laid upon the other, moistened with water, and fastened upon the skin with a bandage.—*Ibid.*, 238—241.

Pyrolusite as a test for the color of Claret.—A. Facen (*Journ. de Méd. de Brux.* 1868, Aout) states that black oxide of manganese removes from claret the natural red color, and this test has been recommended as reliable by a commission of experts. Wittstein corroborates the fact that the natural color of red wine is removed thereby, but found that the color imparted to wine by hollyhock is affected in precisely the same way, and since these flowers are largely used in the manufacture of claret, the test is unreliable.—*Ibid.*, 241, 242.

Glycerin as an application to burns is recommended by J. Fuchs. Through the explosion of a spirit lamp the greater portion of his face had been covered with rather deep burns, which healed in a week by the immediate and oft-repeated application of glycerin, without producing blisters or festering, or leaving any scar.—*Schweiz. Wochenschr.* 1869, No. 6, from *Bresl. Gewerbebl.*

Paraffin in Wax.—Hager has met with a wax adulterated with its own weight of paraffin. To estimate its quantity, two grammes of the suspected wax are fused, then boiled for a few minutes with a solution of 1.5 potassa in 4 or 5 water, and agitated until homogeneous and almost congealed. Six to eight grammes petroleum ether (so-called benzine) are carefully added, the whole well shaken, an excess of aqueous solution of sugar of lead is added with constant agitation, when the mixture is set aside. The petroleum solution is separated, the residue repeatedly washed with the same liquid, and the decanted liquid evaporated. Pure yellow wax leaves a residue of 15 per cent.; any excess is due to paraffin.—*Ibid.*, No. 15, from *Pharm. Cent. Halle.*

Podophyllin, according to some French journals, is prepared by boiling the rhizome with milk of lime, adding to the filtrate a

solution of sulphate of iron and zinc, to precipitate the lime, and evaporating the filtrate to the consistence of an extract, which is exhausted by alcohol; the alcoholic solution is concentrated, and the residue taken up by boiling water, which on cooling deposits the podophyllin.—*Ibid.*, No. 20.

Abietin is the name given to a sweet principle by F. Rochleder, which he discovered in the leaves of *Abies pectinata*; it resembles mannit in appearance, but differs from it considerably in its solubility and composition, which is $C_{12}H_8O_6$.—*Archiv der Pharm.*, 1869, Juni, 263, from *Akad. z. Wien*, 1868, 57.

Horse-chestnut leaves, according to Rochleder, contain a tannin which is also found in tormentilla root; in the former it is converted into æscigenin, $C_{24}H_{20}O_4$, in the latter into kinovic acid, $C_{48}H_{38}O_8$.—*Chem. Centralbl.* 1869, 241—243, from *Ber. d. Wiener. Akad.* lvii, 604.

Isophloridzin.—The leaves of the apple tree contain isophloridzin, according to Rochleder, which is isomeric with the phloridzin of the bark of the root and trunk. By dilute acids it yields isophloretin, of the same composition as phloretin, but readily soluble in ether. Phloridzin belongs to the salicylic, isophloridzin to the benzoic series, and this transformation appears to be a function of the leaves, as the first step towards forming the amygdalin in the seeds.—*Ibid.*, 244, from *Ibid.*, 779.

Nitric Ether.—While experimenting on the products of reduction of this ether by tin and muriatic acid, W. Lossen found the following process yielding good results. One litre nitric acid, sp. gr. 1.4, is heated to boiling with 15 grm. nitrate of urea. After cooling, for every 400 grm. of the acid 300 grm. absolute alcohol and 100 grm. nitrate of urea are added, one-half of the mixture is distilled off, and then a similar mixture of acid and alcohol is introduced through the tubulure, to compensate for that which is distilling off. In this way several pounds of nitric ether may be obtained in a day; 100 grm. nitrate of urea are sufficient for 12 to 15 lbs. ether, when it must be replaced by a fresh portion.—*Ibid.*, 348, from *Zeitschr. f. Chem.*, N. F. iv, 403.

To distinguish gum senaar from gum arabic, which latter is

frequently adulterated with it, Dr. Schlosser recommends the following process: 3 grammes of the gum are dissolved in 15 grms. cold distilled water, to the solution 30 grms. of Goulard's extract, Ph. Austr. 1853,* are added, and filtered through a small filter. Pure gum arabic yields in about an hour a scarcely opalescent filtrate weighing 18 to 20 grm., and the residue is not fluid. Senaar gum yields very slowly (in twenty-four hours) a milky filtrate, and the residue upon the filter, after 20 grm. have passed, is still liquid; a second filtration renders the filtrate clear.

6 grm. of the filtrate are diluted with 5 grm. water, and then mixed with $1\frac{1}{2}$ grm. ammonia, sp. gr. .960. With pure gum arabic an almost clear liquid is obtained, which in twenty-four hours deposits a slight precipitate; senaar gum, however, produces a stiff white gelatinous mass, and gum arabic adulterated with dextrin behaves in this respect similar to senaar gum; this appears to come from a different source. Gum Senegal behaves exactly like gum arabic.—*Zeitschr. d. Oester. Apoth. Ver.* 1869, 209, 210.

The soluble saccharated Oxide of Iron as an antidote to Arsenic has been experimented with upon animals by Dr. H. Köehler, of Halle. He regards it as a useful antidote, and recommends not to use albumen nor saline purgatives with the iron, but afterwards remove the neutralized arsenic by emetics.—*N. Jahrb. f. Pharm.* 1869, März, 129—150.

Preparation of pure muriatic acid.—P. W. Hofmann, (Ber. d. Chem. Gesellsch. zu Berlin, i, No. 21,) found that when to crude muriatic acid, contained in a suitable vessel, sulphuric acid sp. gr. 1.848 is added, muriatic acid gas is at once evolved, which may be washed and absorbed by distilled water. The evolution of gas is very regular, accompanied by little heat, and ceases only when the sulphuric acid is reduced to sp. gr. 1.566. It contains then only 0.32 per cent. HCl, and no further loss is sustained besides the dilution of the sulphuric acid.—*Buchner's N. Repert.* 117, 118, from *Ber. d. chem. Ges. zu Berlin I, No. 21.*

* This being made of 2 sugar of lead, 1 litharge, and 8 water, is about half the strength of that officinal in U. S. P.

Conchinin is the name given by O. Hesse to a cinchona alkaloid, which he states has already received the various names, pitayin, chinidin, β chinidin, β chinin, B chinin, crystallized chinoidin and cinchotin. It turns polarized light to the right, like cinchonia, is isomeric with quinia, is precipitated from its neutral solutions by iodide of potassium, and yields with chlorine and ammonia the same green coloration as quinia. The base is evidently the same which by Pasteur was named quinidia.

Hesse states that at 15°C . it dissolves in 2000 water, at 10°C . in 35, and at 20°C . in 22 p. ether, and at 20°C . in 26 p. 80 per cent. alcohol; the alkaloid crystallizes readily from its solutions. The sulphate has the formula $2\text{C}_{20}\text{H}_{24}\text{N}_2\text{O}_4, \text{S}_2\text{H}_2\text{O}_8 + 4\text{HO}$, and dissolves in 108 p. water of 10°C . The neutral hydriodate requires 1270 p. water at 10°C . for solution. Its soluble salts are precipitated by ferrocyanide of potassium as a yellowish crystalline powder, while, if previously heated, golden-yellow prisms are obtained; this behaviour is identical with that of cinchonia, which Bill thought could be distinguished by this test.

From a neutral solution of the four cinchona alkaloids, dilute solution of Rochelle salt precipitates those deviating polarized light to the left, (quinia and Pasteur's cinchonidia = chinidin of the German chemists), while those deviating to the right remain in solution (cinchonia and Pasteur's quinidia = Hesse's conchinin).—(*Ann. d. Ch. u. Pharm.* cxlvi, 357-370.)

Small weights.—H. Reinsch suggests, to weigh accurately a piece of aluminum wire, to draw a line of precisely the same length upon paper, divide it into the requisite parts in the well-known way and cut the wire after marking the divisions upon it; each piece may then be bent to the shape of the figure it represents, thus V for 5, &c.—*N. Jahrbuch f. Pharm.* 1869, 18.

Tests for minute quantities of Hydrocyanic Acid.—Schoenbein (*Schweiz. Wochenschr. f. Pharm.*) moistens filtering paper with fresh tincture of guaiacum, containing three or four parts resin, and, after drying, with a solution containing one-quarter per cent. of sulphate of copper. This paper is instantly rendered blue in the atmosphere of a 20-litre vessel containing one drop of dilute hydrocyanic acid of one per cent.

Iodinized starch paper (1 KI, 10 starch and 200 water) moistened with the above solution of copper and suspended in a 10-litre vessel containing one or two drops of the above hydrocyanic acid, turns red; the color disappears again after some time, in consequence of the formation of iodide of cyanogen and hydriodic acid; this reaction indicates 1HCy in 2,000,000 solution.—*Ibid.* 67-69.

ON SOME MEANS FOR PREVENTING THE BUMPING OF BOILING LIQUIDS.

By HUGO MÜLLER, F. R. S.

The annoyance which arises from the bumping of certain liquids when submitted to distillation or boiling has often attracted the attention of chemists, and various means have been proposed for its prevention.

The value of pieces of platinum, charcoal, burnt clay, and other porous bodies for this purpose is well known, and under certain circumstances are efficient enough; yet there occur very frequently cases in the laboratory when these means are unavailable.

About two years ago Pietro Pellogio (*Fresenius Zeitschr.*, vi, Jahrg.) proposed a very simple contrivance, which was stated to act very satisfactorily indeed. It consisted of a moderately wide glass tube, passing through the cork of the tubular of the retort, and nearly reaching the bottom of it, the upper end being bent at right angles and drawn out into a capillary tube.

Having occasion to try the efficiency of this arrangement, I came to the conclusion that it was quite ineffective, and shortly after G. Hager (*Pharmac. Central-halle*, Bd. 9) confirmed the negative results I obtained.

Quite recently E. Winkelhofer (*Ber. d. Chem. Gesellsch. Berlin*, p. 194, 1869) proposed for the same purpose the application of an electric current, which, through the incipient decomposition of the liquid and consequent evolution of gas, causes the ebullition to become quite regular and steady. Dufour, for another, with another object in view, had made use of the same means.

The application of the electric current unfortunately presup-

poses that the liquid to be distilled is a sufficiently good conductor of electricity, and if this is not the case necessitates the introduction of such substances as shall cause the liquid to become a conductor. This circumstance, therefore, limits very considerably the use of this otherwise efficient arrangement, and it is on this account that I venture to bring under notice some other means which I have tested in a variety of cases, and which invariably proved satisfactory.

In cases where the introduction of any foreign matter into the liquid about to be distilled is undesirable, I introduce through the cork in the tubular of the retort a glass tube, which is drawn out to a long capillary tube and pressed tightly to the bottom of the retort. The upper end of the glass tube is connected, by means of an india-rubber tube, with a generator of carbonic acid, or hydrogen, or a gas-holder containing air, and whilst the distillation is going on one of these gases is passed in a slow but continuous current through the liquid. Under these conditions, all bumping is avoided, and the distillation proceeds with the utmost facility.

For ordinary purposes, however, I have found it still more convenient to introduce into the liquid about to be distilled a small fragment of sodium amalgam or, in cases where the liquid is acid, a small piece of sodium tin. Methylic alcohol is well known to be one of the most difficult liquids to distil, yet, on the introduction of a minute piece of sodium amalgam or sodium tin, it can be distilled without the slightest inconvenience. I found on one occasion that more than 400 grammes of methylic alcohol distilled over with perfect steadiness, and without exhausting the activity of a fragment of sodium tin, weighing not more than 0.060 grms.

It is, perhaps, hardly necessary to mention that the action of sodium amalgam and sodium tin is due to a minute but continuous disengagement of hydrogen taking place during the process of distillation.—*Chem. News, Lond. July 30, 1869.*

FUSIBILITY AND VOLATILITY OF METALS.

While engaged with experiments on the intrinsic composition

and constitution of various pieces of silver money, made at the Royal Netherlands Mint, at Utrecht, Dr. A. von Riemsdyk carried on some experiments on the fusibility and volatility of metals, from the published record of which we abstract the following: The metals tin, bismuth, cadmium, lead, and zinc, as chemically pure as they can be obtained, were molten, in order to prevent their oxidation, in a feeble, but constant, current of pure and dry hydrogen gas. The author found that—(1) the melting of these metals does not, either mechanically or by evaporation, give rise to any loss at all; (2) that *tin*, *lead*, and *bismuth*, when kept in a liquid state, are not volatile at temperatures greatly in excess of their melting points, and that, at a bright red heat, quantities of 2·3433 grms. of *bismuth*, and 4·5183 grms. of *lead*, did not lose, by being kept at that temperature for one hour, more than 1 and 0·5 m.m., respectively, by evaporation, while *tin* did not exhibit any volatility at all; (3) that *cadmium* and *zinc*, though completely fixed, non-volatile, at their melting point, begin perceptibly to volatilise at a few degrees above that point; (4) that there does not exist any relation at all between the fusibility and volatility of these metals, which may be arranged in the following manner, beginning from the most fusible and most readily volatile:

Fusibility.		Volatility.
Tin,	228·5° C.	Cadmium.
Bismuth,	268·3° "	Zinc.
Cadmium,	320·0° "	Bismuth.
Lead,	326·0° "	Lead.
Zinc,	420·0° "	Tin.

(5) that the so-called Rose's fusible metal, an alloy of tin, lead and bismuth, the melting point of which is about 97·5°, and certainly not higher, is not perceptibly volatile when heated to a bright red heat in a current of pure hydrogen gas. Silver, unalloyed, melts at 1040° C., pure gold at 1240° C., while the author found that chemically-pure copper requires a temperature of 1330° C. to become liquid. Neither pure silver, nor pure copper, nor also the alloy of silver and copper containing 945-1000ths of the former metal (this alloy is the standard alloy of the Netherlands silver coins), loses anything at all by volatilisa-

tion when kept for a considerable time at temperatures higher than the melting points of both these metals, and in a feeble current of pure hydrogen to prevent their oxidation. The author has made some of these experiments on a very large scale, having at his disposal large quantities—several hundred kilos.—of these metals in pure and alloyed state; he also describes an ingenious pyrometer devised and invented by him, but space forbids us to enter into further details.—*Chemical News, London, July 16, 1869.*

ON THE REDUCTION OF TEMPERATURE BY THE SOLUTION OF SALTS.

By FR. RUDORFF.

The reduction of temperature which takes place on dissolving salts must be the greater the more of this salt is dissolved in the water; and the maximum of the reduction must be reached if salts and water are brought together in such a proportion that at the temperature aimed at a saturated solution is obtained; any excess of water or salt will serve only to prevent the solution from reaching the maximum of reduction, since the excess has to be cooled down likewise. This had not been taken into consideration by former experimenters, and hence the difference of their results.

To avoid the influence of the surrounding atmosphere, the solution must be effected as quick as possible, which is done by using the salt in fine powder, and in slight excess over the quantity actually necessary, and by stirring the mixture.

In making the experiments the finely powdered salt and the requisite quantity of water, each contained in thin beaker glasses, were kept from 12 to 18 hours in a room of uniform temperature, so that both had exactly the temperature of the room; the water was then added to the salt and the mixture stirred with a good thermometer; the greatest reduction took place within one minute. The results in the following table are the mean of several experiments, which never differed more than $.2^{\circ}$ C. from each other:

426 REDUCTION OF TEMPERATURE BY THE SOLUTION OF SALTS.

Salts.	Soluble in 100 water.	Quantity mixed with 100 water.	The temperature falls		
			from	to	Difference.
Alum, cryst.....	10	14	+10.8°	+ 9.4°	1.4° C.
Chloride of sodium.....	35.8	36	12.6	+10.1	2.5
Sulphate of potassa.....	9.9	12	14.7	+11.4	3.0
Phosph. soda, cryst.....	9.0	14	10.8	+ 7.1	3.7
Sulphate ammonia.....	72.3	75	13.2	+ 6.8	6.4
Sulphate soda, cryst.....	16.8	20	12.6	+ 5.7	6.8
Sulphate magnesia, cryst....	80.	85	11.1	+ 3.1	8.0
Carbon. soda, cryst.....	30.	40	10.7	+ 1.6	9.1
Nitrate potassa.....	15.5	16	13.2	+ 3.0	10.2
Chloride potassium.....	28.6	30	13.2	+ 0.6	12.6
Carbon. ammonia.....	25.	30	15.3	+ 3.2	12.1
Acetate soda, cryst.....	80.	85	10.7	— 4.7	15.4
Chloride ammonium.....	28.2	30	13.3	— 5.1	18.4
Nitrate soda.....	69.	75	13.2	— 5.3	18.5
Hyposulphite soda, cryst....	98.	110	10.7	— 8.0	18.7
Iodide potassium.....	120.	140	10.8	—11.7	22.5
Chloride calcium, cryst.....	200.	250	10.8	—12.4	23.2
Nitrate ammonia.....	55.	60	13.6	—13.6	27.2
Sulphocyanide ammonium.....	105.	133	13.2	—18.0	31.2
Sulphocyanide potassium....	130.	150	10.8	—23.7	34.5

The absolute quantities used were between 250 and 500 grm. water and the requisite amount of salt. With smaller quantities than about 200 grm. water the absorption of the vessel exerts a marked influence, and experiments have also proved that an increase of the salts over the proportions given above has a similar influence.

A higher temperature at the beginning will produce a different result with those salts, the solubility of which is considerably increased by a rise of temperature. On dissolving the necessary quantity of saltpetre in water of 23.0° C. the temperature fell to 10.2, a difference of 12.8° against 10.2°, at 13.2°. In describing the results it is necessary to give the temperature at the beginning and end of the experiment, and not merely the difference.

A reduction of temperature *below* the freezing point of the resp. solution cannot be obtained, but this point may be reached. The temperature of water of 0° C. on mixing with the requisite amount of saltpetre fell to —2.7°, crystallized soda to —2.0°,

nitrate of ammonia to -16.7° C. The freezing points of these solutions are -2.8° , -2.0 and -16.7° , respectively.

If 500 grm. of sulphocyanide of potassium is dissolved in 400 c.c. water by stirring with a test tube half filled with water, this will freeze in two or three minutes. This salt is probably best adapted to the manufacture of ice.

The solubilities in the above table are taken from Mulder's statements. With the two sulphocyanides the author experimented, and found in 100 parts of water the potassium salt soluble as follows: at 0° 177.2 p., at 20° 217.0 p., and the ammonium salt at 0° 122.1 p., at 20° 162.2 parts.—*N. Jahrb. J. Pharm.* 1869, April, 222—224, from *Ber. d. d. chem. Gesellsch.* ii, 68.

ON PIPERINIC ACID.

By RUD. FITTIG, and W. H. MIELCK.

The acid was prepared by heating piperina with alcoholic solution of potassa. The recrystallized acid fuses at 216 to 217° C. afterwards constantly at 212 to 213° ; v. Babo and Keller gave the fusing point at 150° . At a somewhat higher heat the acid partly decomposes and sublimes in fine yellow needles. Heated with pure water to 235 or 245° C. it is completely decomposed into carbonic acid and a mixture of acid resinous bodies. Apparently the same decomposition is effected by very dilute muriatic acid at 160° , and by concentrated muriatic acid at 100° . By heating with lime, it yields charcoal, carbonic acid, water and a trace of oil resembling phenol. Piperinate of potassa heated with iodide of ethyl, potassa and alcohol, yields piperinic ether. Chromic acid oxidizes piperinic acid completely to carbonic acid and water. With dilute nitric acid, oxalic acid and a red amorphous body are formed.

Permanganate of potassa oxidizes the piperinates, the solution acquires an agreeable odor of coumarin, and yields by distillation a beautifully crystallizing body, piperonal = $C_8H_6O_3$; oxalic and carbonic acids and water are formed at the same time. Piperonal crystallizes from water in long lustrous colorless transparent prisms, is very soluble in ether and boiling alcohol, fuses at 37° C., boils at 263° and has a very agreeable

odor, resembling coumarin; it has the character of an aldehyde, and yields with sodium amalgam, among other products two crystallizable alcohols.

The authors have also studied the effect of bromine upon the acid and by oxidizing piperonal with permanganate of potassa, a new acid, piperonylic acid = $C_8H_5O_4$, was obtained.

The experiments are insufficient to determine the constitution of piperinic acid.—*Zeitschr. f. Chemie*, 1869, 326-332.

ACTION OF BOILING LIQUIDS CONTAINING ACIDS AND ALKALIES UPON GLASS AND PORCELAIN VESSELS.

By DR. A. EMMERLING.

This essay, or rather monograph, contains the record of a series of most minutely executed experiments, whereby to determine the influence of various fluids, containing acids, salts, and alkalies, upon vessels made of different qualities of glass and porcelain, in order to determine the amount of substance dissolved by such chemicals, and also by pure distilled water, and to ascertain what influence is thus exercised upon the accuracy of analysis and chemical researches in general. This monograph is full of interesting details, including analyses of glass. *En résumé*, its leading features are the following: The action of boiling liquids, as specified above, upon glass vessels is proportionate to the duration of time of boiling; the action is proportionate to the surface which is in contact with the boiling fluid; the action is independent of the quantity of fluid which evaporates during a given time; the action decreases with the decrease of temperature of the solution; alkalies, even in dilute solutions, attack glass very strongly; acids generally act less than pure water, excepting sulphuric acid; among the salts, those act most energetically whose acids produce insoluble salts with lime—*e. g.*, sulphate and phosphate of soda, carbonate of soda, and oxalate of ammonia, the action of each of which increases with the degree of concentration of the solution; such salts as form, in water, readily soluble lime salts—for instance, the chlorides of ammonium, potassium, calcium, and nitrate of potassa—less strongly than pure water alone, and, with the greater degree of concen-

tration of these salts, the action decreases. Bohemian glass stands acids better than the kinds of glass containing soda; the Berlin porcelain ware is only perceptibly acted upon by alkalies. —*Chem. News, Lond. July 23, 1869, from Annalen der Chemie und Pharmacie, June, 1869.*

IMPROVED MODE OF MANUFACTURING GLUCOSE FROM STARCH.

By M. MAUBRE.

The author states that, by the usual mode of proceeding, a portion of the starch is always left in the state of dextrine; he therefore operates under pressure and a higher temperature. For this purpose, he applies a strong cylindrically-shaped iron vessel, internally lined with lead; this boiler is charged with 28 kilos. of sulphuric acid, at 60° Beaumé, and 2800 litres of water, and this liquid is brought to the boiling point by means of high pressure steam. When boiling, there is gradually run into this fluid a mixture of 1180 kilos. of starch and 2500 litres of water, acidulated with 28 kilos. of sulphuric acid. When the whole of this quantity has been introduced into the aforesaid boiler, it is closed, and the temperature within it raised to 160°, by means of high pressure steam introduced into the boiler by leaden and perforated pipes. After about four hours, the action is complete, the fluid run off into tubs, and the acid saturated by means of 84 kilos. of finely-powdered good limestone. After separation of the sulphate of lime, the fluid is evaporated to 20° B., clarified with animal charcoal, and next evaporated in vacuum pans, yielding an excellent and beautiful glucose. —*Lond. Chem. News, July 16, 1869, from Moniteur Scientifique, No. 300, June 15, 1869.*

ESSENCE OF SASSAFRAS.

By MESSRS. GRIMAUD AND RUOTTE.

The essential oil of sassafras, obtained from the *Laurus sassafras*, is, when recently rectified, a colorless fluid, which, at 0° C. (32° F.) has a specific gravity of 1.0815. The oil is a mixture

of a hydrocarbon and an inactive oxygen-containing principle; this latter consists, in 100 parts, of—Carbon, 74.43; hydrogen, 6.46; oxygen, 19.11. It is present in the natural oil in so small quantity that only just sufficient for a good elementary organic analysis was obtained. The hydrocarbon (safren) contains $C_{10}H_8$, and consists, in 100 parts, of—C, 88.23; H, 11.77. Its vapor density has been found equal to 4.84. Safren boils at about 156° . The oil further contains safrol, $C_{10}H_{10}O_2$, boiling at between 231° and 233° . Safrol is insoluble in water. Its specific gravity is 1.1141 at 0° ; at -20° it is not frozen. The authors have studied the action of bromine, of hydriodic acid, of perchloride of phosphorus, and nitric acid upon safrol, but state that none of these reactions gave such results as they expected. With bromine, safrol yields a compound of the formula $C_{10}H_7Br_2O_2$.—*Chem. News, Lond.* July 16, 1869, from *Bulletin de la Société Chimique de Paris*, June, 1869.

ON THE FUSING AND CONGEALING POINT OF FATS.

BY DR. TH. WIMMEL.

The temperatures at which fats fuse and congeal are given very differently by different authors. This difference may to a certain extent be accounted for by the natural variation of the fats, but from numerous observations of the author is confined to narrow limits, and the different results are probably due to the frequent mistaking of the fusing and congealing points, as well as to the methods employed for ascertaining them.

The temperature at which fats become transparent, and the temperature at which they become fluid, has been taken as their fusing point. The author reviews several methods and gives the preference to that of Bouis (*Annales de Chim. et de Phys.* xlv, 152), which with a few modifications he adopted for his experiments.

Cylindrical thin-walled glass tubes are selected, of one-eighth to one-sixth inch in diameter and perfectly smooth inside; they are within an inch of one end filled with the fused fat, and after it has congealed, laid aside for one or two days to allow the fat to assume its natural hardness. Lard which had been kept after congealing in cold water for two hours, fused at $33^\circ C.$, but

after two days at 42° ; butter under the same circumstances fused at 25° and 31.5° C. respectively.

Some fats become transparent several degrees above their fusing point, like tallow and suet; while Japan wax is perfectly transparent at 42° , but becomes fluid at 53 to 54° C.

The tubes with a thermometer are placed in a beaker glass, the bottom of which is covered with several layers of paper; water is then poured in until it reaches half an inch above the surface of the fat; the apparatus is then placed upon a piece of sheet iron and very slowly heated by an alcohol lamp, until the liquified fat is pushed up to the level of the surrounding water by the water entering at the lower orifice of the tubes. A few fats rise so slowly in the tubes that the temperature still perceptibly increases; the difference, however, rarely reaches half a degree.

All true fats, that is compounds of oxide of glyceryle, congeal more or less below their fusing point, while, for instance, wax and spermaceti congeal immediately below the temperature at which they fuse. On congealing the true fats always show an elevation of temperature sometimes to near the fusing point.

The author's experiments have given the following results:

Fats.	Fuse at	Congeval at	Temp. rises to
Beef tallow, fresh,	43° C.	33° C.	$36-37^{\circ}$ C.
" older,	43.5	34	38
Mutton suet, fresh,	47	36	$40-41$
" old,	50.5	39.5	$44-45$
Hog's lard,	$41.5-42$	30	32
Butter, fresh,	$31-31.5$	$19-20$	$19.5-20.5$
" tub,	32.5	24	25.5
Japan wax,	$53.5-54.5$	$40.5-41$	$45.5-46$
Cacao butter,	$33.5-34$	20.5	$22-23$
Palm oil, fresh, soft,	30	21	21.5
" fresh, harder,	38	24	25
" old,	42	38	39.5
Oil of Mace,	$43.5-44$	33	$41.5-42$
Beeswax, yellow,	$62-62.5$	} Congeal just below the fusing point, without rise of temper- ture.	
" white,	$63-63.5$		
Spermaceti,	$44-44.5$		

Wittstein's *Viertelj. Schr.* 1869, 272-278, from Poggendorff's *Annalen*, cxxxiii, 121.

NOTE ON CAPSICINA.

By Dr. EMIL FELLEŦAR, of Pest.

Dr. Emer. Poor has used capsicum annuum (paprika of the Hungarians), in the general hospital of Pest, against intermittent fever, and regards 1 drachm of the powder as equivalent to 3 drachms of powdered cinchona bark. Dr. FelleŦar was induced to analyze it, and discovered a volatile alkaloid.

Capsicum is boiled with water acidulated with sulphuric acid, the decoction mixed with liq. potassa and distilled. The distillate has a strong alkaline reaction, and a penetrating odor strongly resembling that of conia; it is neutralized with sulphuric acid, evaporated to dryness, exhausted by absolute alcohol to separate ammonia salt, the solution evaporated and the residue treated with potassa solution, when the strong stupefying odor of conia is again developed. This alkaline solution was treated with ether; the ether distilled off possessed a strong alkaline reaction and, besides the odor of conia, reminded somewhat of pepper. After the ether had been distilled off, the residue in the retort became brown and decomposed. On mixing the distillate with a little muriatic acid, the odor disappeared, and on evaporation a minute crystalline residue was left.

The author promises further investigations.—*Arch. d. Pharm.* 1869, *Juni* 261, 262, from *Pharm. Post, Vienna, Aug. 1, 1868.*

ON THE VARIETIES OF TAPIOCA AND SAGO PREPARED IN THE MALACCAS.

It appears that, at the request of the resident Governor of the Malacca Islands, researches have been instituted concerning this food, at the Laboratory, at Welte Vreden, Java. The authors of this paper, MM. Maier, Moens, and Scharlec, found that three varieties of sago, denominated white, red, and blue, contain respectively—water 16·14, 18·83, and 18·47 per cent.; protein compounds, respectively—3·7, 2·5, and 2·4 per cent.; starch, fat, &c., respectively—79·88, 78·06, and 78·15 per cent.; ash, respectively—0·22, 0·52, and 0·94 per cent.—*Chem. News, Lond.* July 16, 1869.

THE FLORA OF PALESTINE AND SYRIA.

By REV. GEORGE E. POST.

Palestine and Syria embrace four distinct botanical regions :

I. The sea-coast plain and lower slopes of the hills, with the deeper valleys, which run far into the heart of Lebanon and the hill country of Galilee. The climate of this region is subtropical, and fosters the development of the banana, the palm, the sugarcane and the orange. In this region frost is almost unknown, snow is quite rare, being seen only once in ten or fifteen years, and the hot sun of summer pouring on a soil made humid by irrigations, develops a luxuriant vegetable life.

II. The mountain sides, from 1000 to 4000 feet above the sea, with the valley of Cœle Syria, and the plain of the Orontes. Here the flora changes. The palm will no longer flourish. The banana refuses to fruit. The orange and the lemon cease to be productive, and their place is taken by the oak and the willow, and the pine and the maple. The olive and the mulberry are equally productive in this and the foregoing region, but in this form almost the only orchards, while on the plain they share the attention of the farmer with the before-mentioned trees. In this region wheat and barley flourish, and the vine attains the most perfect development. The herbaceous flora of these two regions is similar in type, except that as we rise on the mountain sides the *Tetragonthea* and *Stachys*, and *Squill* and *Pan-crati-um* of the plains begin to yield to the thorny mountain species of *Astragalus*, and *Tragacanth*, and *Eupigium*, and the aromatic *Origanums* and *Teucriums*.

III. A third region comprises a small part of Cœle Syria, near the head waters of the Litany and Orontes, with the plain east of Damascus and Hums. The soil of this region is thin, being fit only for the production of grasses and thorny herbs, the scanty pasture of the Arab's flocks and herds. Here grow *Centaurea dumulosa*, and *Delphinium anthoroides*, and many *Astragali* and other *Leguminosæ*, while not a solitary tree, or even shrub, enlivens the dreary landscape. It is the type of those great waterless plains, which, for a short space, interrupted by the fertile district of Mesopotamia, extend eastward through Persia to the great desert of Cobi.

IV. The fourth of these regions is from the height of 4000 feet on Lebanon and Hermon, to their snow clad summits. Here the scanty remains of their once extensive forests of cedar and oak, and pine, end at an elevation of 6000 feet above the sea, and for the remaining 4000 feet of naked rock we have left such treelets as the Cotoneaster, and *Prunus prostratus*, and *Daphne olæoides*, while the herbaceous flora is represented in the lower regions by *Astragalus lanatus*, *Alyssum montanum* and *Ranunculus demissus* and *Viola ebracteolata*, and higher up by hemispherical bogs of a species of *Astragalus*, *Onobrychis tragacanthus* and *Acantholimon Libanoticum*, while on the extreme summit of Lebanon we find *Ucia canescens*, and of Hermon, *Pyrethrum densum*.

A fifth region might be enumerated, viz., the plain about Jericho, in which, owing to the depth of its surface below the sea, about 1300 feet, and the reflected glare of the sun from the mountains and surface of the Dead Sea, the heat mounts to equatorial degrees, and a flora is found resembling that of Lower India. More than twenty species are found here and around Engedi, which are not found again until we cross the Himalayas.

Thus it will be seen, that while on the summit of Lebanon there is a plant, *Oxygia reniformis*, belonging to the Arctic flora, in the valley of the Dead Sea we have representatives of the vegetation of the torrid zone, and this in the midst of a region with a temperate climate, by a special arrangement, seemingly designed to extend the range of human thought and observation within limits almost microcosmical. For while on any high mountain in the tropics we may have the near conjunction of these diverse forms of vegetable life thus answering the ends of variety and comparison, yet the general surface of the country in such cases would be torrid, and hence ill-adapted to the development of a hardy, independent race, such as inhabited the mountains of Palestine and Syria. In the Holy Land, however, the end is gained by sinking a small section down to a tropical level, leaving the rest of the country more favorably situated for the support of vigorous life, and the development of individuality of national character.

A single observation more is in place here. It is that in

Syria all plants necessary to life, or conducive to health, are either indigenous or flourish under cultivation in the open air, and that the indigenous materia medica supplies types of all the leading groups of remedies used in the healing art. This statement is illustrated by the fact that in the gardens of Syria grow the potato, bean in all its varieties, indian corn, egg-plant, squash, pumpkin, artichoke, cucumber, onion, tomato, turnip, cabbage, cauliflower, spinach, carrot, beet, and many other vegetables and the lemon, orange, citron, pomegranate, apricot, plum (in all varieties), peach, apple, cherry, blackberry, mulberry, banana, fig, date, grape, and other kinds of fruit; the walnut, pistachio, filbert, almond and other nuts; the squill, castor oil plant, elaterium, scammony, colocynth, salep, acacia, galls, poppy, *Conium maculatum*, aloe, various Euphorbias, madder and many other medicinal and economical plants.—*The Am. Naturalist*, May, 1869.

THE CEDARS OF LEBANON.

Dr. Hooker makes the following interesting communication to a recent number of the "Gardener's Chronicle:"—"The Rev. M. Tristram, F.L.S., informs me of a most interesting discovery lately made in the Lebanon, viz., of several extensive groves of cedar trees, by Mr. Jessup, an American missionary, a friend of his own, to whom he pointed out the probable localities in the interior. Of these there are five, three of great extent, east of 'Ain Zabalteh,' in the southern Lebanon. This grove lately contained 10,000 trees, and had been purchased by a barbarous Sheikh, from the more barbarous (?) Turkish government, for the purpose of trying to extract pitch from the wood. The experiment of course failed, and the Sheikh was ruined, but several thousand trees were destroyed in the attempt. One of the trees measured fifteen feet in diameter, and the forest is full of young trees, springing up with great vigor. He also found two small groves on the eastern slope of Lebanon, overlooking the Buka'a, above El Medeuk; and two other large groves containing many thousand trees, one above El Baruk, and another near Ma'asiv, where the trees are very large and equal to any others; all are

being destroyed for firewood. Still another grove has been discovered near Duma, in the western slope of Lebanon, near the one discovered by Mr. Tristram himself. This gives ten distinct localities in the Lebanon, to the south of the originally discovered one, and including it. Ehrenberg had already discovered one on the north of that locality, and thence northwards the chain is unexplored by voyager or naturalist."—*The Amer. Naturalist*, April, 1869, from *Quarterly Journ. of Sci., London*.

THE FLOWERS OF EARLY SPRING.

BY REV. J. W. CHICKERING, JR.

There is perhaps a nearly equal charm about the notes of the first robin, and the sight of the first Mayflower. It will be the object of this article to enumerate, with a few notes upon each, some of our earlier floral visitors, in wood and meadow, in New England.

The list opens, not very attractively, with a plant well known to all, under the mal-odorous name of Skunk Cabbage (*Symplocarpus foetidus*), but whose flower is by no means so familiar, save to the observing botanist, and even he must be on the alert to obtain this first gift of Flora, in full perfection of color and aroma. Early in April, or even in March, almost before the ice is fairly melted, may be found in low marshy ground, this flower, clumsy in form, repulsive and snaky in color, dark purple, with yellowish blotches, and disgusting in odor; soon to be followed by the clump of large fleshy leaves, conspicuous during the rest of the summer. Like Stramonium, and most other noxious and unsightly weeds, it has been tried as a remedy for asthma, and with about as much effect.

In very pleasing contrast comes next *Epigaea repens*, or, as it is sometimes miscalled, Trailing Arbutus, better and more appropriately known throughout New England as the Mayflower.

This, among the very earliest, is also the choicest gift that Flora has in this latitude to offer us, alike for its beauty of form and color, its delicious fragrance, and its charming habit of peeping out, almost from the edge of the retreating snowdrifts. To find the first bunch of Mayflowers is the ambition of many a

boy and girl, as well as not a few children of larger growth. The finest specimens ever seen by the writer were from a mountain in Camden, Maine. It has also been used as a medicinal agent, but with no better nor worse results than many others. It is a true wild flower, resisting all attempts at domestication. Closely associated with this is found the *Hepatica*, in its two forms of *triloba* and *acutiloba*, one with rounded, the other with pointed leaves, probably merely varieties. The little clump of flowers pushes its way through the ground, often in advance of the leaves, and with the varying shades of pink, blue and white, seen in different plants, is a welcome addition to our spring bouquet, though lacking the fragrance of the Mayflower.

About this same time the southern aspect of rocky hillsides begins to whiten with the cheerful, though not specially graceful or showy flowers of the Early Saxifrage (*Saxifraga Virginensis*), and in forest marshes the inconspicuous little Golden Saxifrage, with a name longer than itself (*Chrysosplenium Americanum*). Soon in the meadows the carpet of living green is embroidered with the golden flowers of *Caltha palustris* or the English Marsh Marigold, improperly called Cowslip, and whether correctly or not, associated with creamy milk and yellow butter, while a little later are seen in the morning sun, the white stars of the Bloodroot (*Sanguinaria Canadensis*), as fragile as they are beautiful, generally lasting but for a day. Its orange-colored juice is much used in medicine as an emetic, an expectorant, and a liniment. This plant readily bears transplanting, increases in size under cultivation, and becomes one of the most attractive ornaments of the early flower border. In some parts of the country is found a somewhat similar flower, the Twin-leaf, or Rheumatism Root (*Jeffersonia diphylla*) also well repaying cultivation.

Meanwhile the pastures are beginning to whiten (last year remarkably) with the modest little Houstonia, or Innocence (*Oldenlandia cœrulea*), while a host of violets are making their appearance. *Viola blanda*, a wee, white, sweet-scented species, in the woods; *cucullata*, with its large blue flowers and hood-shaped leaves, with their curious palmate variety; *rotundifolia*, with yellow flowers and shiny leaves; and on the hillsides and

in the pastures the widely varying *sagittata*. *Claytonia Virginica*, well named Spring Beauty, must not be neglected in its moist and generally shady bed.

Along streams in open woodlands, we may find the Spring Cress (*Cardamine rhomboidea*), with large, white flowers; and just shooting up its green stalk, its first cousin the Winter Cress (*Barbarea vulgaris*).

Nor should the floral efforts of trees and shrubs be disregarded. Among the earliest indications of spring the Hazelnut (*Corylus rostrata*) shakes its long catkins along the roadsides, before any signs of swelling leaf-buds are visible, while the Willows (*Salix*), whose name is legion, begin to burst their warm wintry covering. The Savin (*Juniperus Virginiana*) is covered with its curious little flowers. The Hemlock (*Abies Canadensis*) is early in flower, as also the American Yew (*Taxus baccata*). All these require close examination to detect their inflorescence, but well repay it. The two maples, *Acer dasycarpum* (the Silver Maple) and *Acer rubrum* (the Red Maple), hang out their showy pendants very early. The Sweet Gale (*Myrica Gale*), along the edges of swamps, and the Sweet Fern (*Comptonia asplenifolia*), whose dried leaves are the basis of juvenile attempts at smoking, are now in flower; and *Dirca palustris*, well named Leather-wood from the marvellous toughness of its bark, such that it is frequently used in default of leather or twine in repairing broken harnesses or sleds, hangs out its little yellow bells in advance of any leaves.

We close the list with the fragrant Sassafras (*S. officinale*), well known by its aromatic bark and curiously lobed leaves, not so well by its early clusters of yellow flowers, somewhat resembling those of the Sugar-maple; and the Spice-wood, or Feverbush (*Benzoin odoriferum*) also highly aromatic and possessing, like the Sassafras, medicinal value as an aromatic stimulant. Such are the earliest flowers, which in forest, field or fen, invite the search of the botanist and the lover of nature.

Perhaps subsequent articles may give some notes upon the flowers of later spring, summer and autumn, with a floral calendar, and possibly an enumeration of some plants and shrubs well worthy of a place in garden or shrubbery, but hitherto neglected.

If this shall succeed in leading any to a closer study of nature's beauty, and the goodness and glory of the Creator, its object will be answered.—*The Am. Naturalist*, May, 1869.

ON AFRICAN TRAGACANTH.

By DR. F. A. FLÜCKIGER, of Bern.

The substance to which I here apply the name of African Tragacanth is an exudation from the trunk of *Sterculia Tragacantha*, Lindl., a tree of moderate size, occurring in tropical Western Africa from Senegambia to Congo. Mucilaginous matter is known to characterize several plants of the order *Sterculiaceæ*, in which respect one of the most noteworthy is *Sterculia urens* Roxb., an East India tree which exudes abundantly a substance resembling tragacanth. The exudation of the African species under notice has also long been known; but as its chemical nature has not hitherto been investigated, I think the following observations may be of interest. The specimen examined is authentic, having been collected with the plant by the late Mr. Barter, and transmitted to the Royal Gardens of Kew.

African Tragacanth, as I have received it, consists of irregular, knobby, undulated, droppy, or stalactitic masses, more or less bubbly or cavernous, often exceeding an ounce in weight, of a pale yellowish hue or almost colorless, in small fragments nearly transparent, but seen in mass somewhat opaque by reason of innumerable cracks, which also render it much more brittle than true tragacanth. Each mass is in fact traversed by curved fissures answering to successive protrusions of gum. Fragments of bark are often adherent to the flat or inner side of the pieces.

With 20 parts of water, coarsely powdered African tragacanth forms, like common tragacanth, a thick tasteless jelly; with 40 parts of water, the jelly becomes more fluid. Only a very small quantity of gum is really dissolved in the water; the filtered liquid is not precipitated either by neutral acetate of lead or by absolute alcohol, but on addition of basic acetate of lead it becomes a little turbid. The jelly itself reddens litmus paper. Neither thin slices of the dry tragacanth nor the jelly exhibit any trace of cellular structure or of starch, even when examined

in polarized light by means of the microscope. In this respect the tragacanth of *Sterculia* differs from that of *Astragalus*. As a means of promoting the adhesiveness of pilular masses I find the former, whether in the form of powder or mucilage, as advantageous as ordinary tragacanth.

The fine powder on exposure for some days to a temperature of 212° F. loses 20·50 per cent of its weight. The formula $C_{12}H_{22}O_{11} + 5H_2O$ would exactly require 20·5 per cent. of water. It is not soluble in an ammoniacal solution of peroxide of copper; repeatedly boiled with fuming nitric acid it affords an abundance of mucic acid.

The weight of the powder as obtained by drying it at 212° F. does not diminish at 230° F. (110° C). Upon incineration, the dried powder leaves 7·8 per cent. of ash of which the prevailing constituent is carbonate of calcium; 0·122 gramme of the ash indeed contain (after having been previously moistened with a solution of carbonate of ammonium and again gently heated, in order to prevent any loss of carbonic acid) 0·0587 gramme carbonic acid. The amount of the basic part of the ash is accordingly 4·08, referring to 100 parts of the above powder.

The dried and powdered gum was now submitted to elementary analysis* by means of peroxide of copper and a current of oxygen.

- I. In the first experiment 0·3412 gramme yielded 0·5066 and 0·1648.
 II. " second " 0·2982 " " 0·4380 " 0·1524.

that is to say

I. 0·1374 of carbon and 0·01831 of hydrogen.

II. 0·1195 " " 0·01693 " "

accordingly the percentage is in

	I.	II.
Carbon	40·27	40·06
Hydrogen	5·37	5·91

These numbers, however, referring to the crude tragacanth, must be calculated with regard to the fact, that 100 parts of the raw drug correspond to 95·92 parts only of pure tragacanth, if we deduct the above 4·08 per cent. of the bases contained in the ash.

* Performed in my laboratory by Dr. Kraushaar.

Thus the percentage-amounts are for I. II.

Carbon	41.98	41.76
Hydrogen	5.59	5.91

The formula of *gum arabic* shows the following numbers :

12 C	144	42.12
22 H	22	6.41
11 O	176	51.47
	<hr/> 324	<hr/> 100.00

Common tragacanth and other similar gums, however, are usually referred to the formula

12 C	144	44.44
20 H	20	6.17
10 O	160	49.39
	<hr/> 324	<hr/> 100.00

I restrict myself for the moment to the mere communication of the above facts and will not enter into the discussion, whether a gum, tragacanth or bassorin, exists or not, to which the formula $C_{13}H_{10}O_{10}$ should be assigned. Perhaps all the various kinds of these bodies may be referred to one and the same formula. The African tragacanth at least corresponds rather in this respect with gum arabic.

From the experiments here detailed I infer, that the African *Sterculia*-tragacanth may be used both in pharmacy and in the arts instead of the usual drug of Asia Minor. When the Niger and its tributaries are opened to trade, this gum may possibly form an important item of exportation.—*Pharm. Journ.*, May, 1869.

ON THE COPAL OF ZANZIBAR.

Extract from a letter from JOHN KIRK, M.D., F.L.S., dated Zanzibar, March 20, 1868.

The vegetation along the creek of Dan Salam* consists of many curious and, to me, unknown bushes, with heavy timber scattered here and there; among them was the *Trachylobium Mossambicense*, Kl., distinguished by its rounded head of glossy

[* Dan Salam is stated in the letter to be a spacious creek opposite the southern end of Zanzibar Island.—Ed.]

leaves, with white groups of flowers projecting from the points of the branches. This is the "M'ti Sandarusi" (Tree of Copal) of the natives; and from it one variety of Copal is obtained. On examining the tree more closely, the trunk and main limbs were seen to be covered with the clear resinous exudation, now brittle and hard; from the upper branches it dropped down on the ground below, but not in a fluid state. To judge by the appearance it presented, I should say that the resin soon dries and hardens after being exuded, but must be easily broken off by violence; pieces of various tint and form were collected, some with insects imbedded; but all presented a smooth polished exterior, quite free from any pitting or "gooseskin" found on all kinds dug up from the ground. This sort is known in trade as "Sandarusi ya m'ti," or Copal from the tree; it is exported in considerable quantity to India, but not to Europe. Having thus established the source of one sort of Copal to be the *Trachylobium*, and transmitted the resin with full herbarium specimens of flower and fruit (which, if I mistake not, are to this day desiderata in all our collections), let me briefly state my reasons for thinking that in this tree we have the source of the older Zanzibar Copal, the semifossil or bituminized resin known in the English market as "Animé," and which is the most valuable of all resins for the manufacture of varnish, exceeding anything produced on the west coast for hardness, elasticity and polish.

There are three distinct kinds of Copal in the Zanzibar trade, subdivided by merchants into many classes, according to color, form, surface, and other peculiarities known to those in the trade, and affecting the value variously in different markets:—first, we have "Sardarusi-m'ti," Tree-Copal; second "Chakazzi," or Copal dug from the soil, but modern (seemingly) in origin, and obtaining a price like that of the former quality; the third is the true Sandarusi, like the second, dug from the soil, but hard, less soluble, and more than twice the value. This forms by far the greatest part of Zanzibar Copal, the export of which has sometimes reached 800,000 lbs. at a value of £60,000.

I have already described the "Tree-Copal;" it is gathered directly from the tree, which is known along the coast from

Mozambique to near Lamo, or from 3° to 15° south lat., but is most common between Cape Delgado and Mombas. The *Trachylobium Mossambicense*, Kl., is found along the creeks and on the maritime plain or the old sea-beach, but becomes very rare at a little distance inland, and quite unknown long before the change in geological structure offers an explanation of its absence. It requires the near presence of the sea for its growth, and dies when far removed from its influence.

The second sort, or "Chakazzi" gum, is found in the ground at the roots of modern Copal-trees, or in the country where these exist; but it is also, I am told, to be got with true Copal. That it is found near the existing forests is certain; and there the true Copal is not known; and we must accept with caution the statement that it is also found in the interior, from this well-known fact, that our informants habitually mix the inferior coast gum with the valuable produce of the interior. This "Chakazzi" is obviously the recent gum which has remained a short time in the soil after the death of the tree which produced it, yet long enough to take the impression of sand and stone, or other hard matter, as the hardest sealing-wax long felt on a coin will take the impression, or as ice will flow down a valley.

The Tree-Copal, or "Animé" of the English markets, is undoubtedly the produce of forests now extinct; for there is no tree now growing at a distance from the coast which produces it. It is obtained all along the ancient sea-beach, the maritime plain which here fringes the Continent to a depth of 20-40 miles in general. Some spots are richer than others, and some soils indicate good "diggings." When the rains which follow the north-east monsoon have softened the soil, the natives of the country commence to dig this from small pits, searching the soil as removed; but there is no system, and, like the gold-washings of Africa, so the Copal-regions yield not a fraction of what a little system and industry might produce. At present every clan-feud stops the search. The producer receives, even when successful, only a trifle from the Indian merchants, who again part with it, often paying enormous dues to the Zanzibar State, to the European and American traders. The supply, considering the extent over which it is scattered, seems unlimited; for at present

with most inadequate means and much discouragement to the laborers, the amount obtained is very great.

If we take into account the similarity of the recent and fossil resins in appearance, their near approach in physical properties, the fact that the recent gum, often being imbedded in sand, takes the characteristic surface-markings, and recollect that where now the good Copal is dug as a fossil the present Copal-tree, in all probability, once grew, when the sea was nearer to the hills than now,—I think we may be satisfied that the *Trachylobium* was the source of the old Copal, which is the resin only modified by time and long exclusion from air and light under the ground.

Perhaps it may be asked, is there not proof in the gum itself that the *Trachylobium* then existed? I have as yet found none: insects (all of them ærial) are often preserved; sometimes branches and leaves; but I have not seen evidence of the Copal-tree. When we remember that the resin soon hardens after being exuded, and that it runs from the underside of the main limbs, while the leaves, flowers and fruit are at the extremities of the branches, we shall see that leaves of the underwood which sweep the lower branches are much more likely to be embalmed than the leaf of the tree itself, which, besides, is hairy, glossy, and unlikely to adhere. If a part of the modern tree were found in the old hard gum, the proof would be complete; at present some doubt remains.

I have sent not only full herbarium specimens, but also specimens of the recent gum, of the "Chakazzi," and of the valuable Copal, in which are many insects; and I would suggest that entomologists should assist us by their opinions whether these belong to existing species or not.—*Pharm. Journ.*, May, 1869, from the *Journal of the Linnean Society*.

DOUBLE SALTS OF CARBOLIC ACID.

At the Royal Medical and Chirurgical Society a paper, by Dr. Arthur Ernest Sansom, on these new salts was read.

Modern research has established, with a near approach to precision, the doctrine that zymotic diseases are due to the influence

of minute organized germs upon the body. In the case of vaccinia they seem to be demonstrable as minute granules. By inference, if not by observation, much can be learned concerning the physical qualities of these disease-producing organisms. They are capable of destruction by various chemical agencies; on this circumstance is based the theory and practice of disinfection. The agencies which destroy them are, however, not always chemical; some bodies which can be proved to have no chemical influence whatever have the peculiar property of arresting the vitality of organized bodies. Though means have been long adopted, in order to prevent the spread of disease, to neutralize disease-producing agencies externally to the living body, it is only lately that a plan of treatment has been pursued with the object of killing the vitally endowed disease-producing particles when once they have entered the living organism. The plan of treatment by the sulphites recommended by Professor Polli no doubt destroys germs, sulphurous acid and the sulphites acting upon them not as chemical, but as vital poisons. Perhaps the most powerful agent known possessing a like property is carbolic acid. This, however, in regard to its administration, presents many practical difficulties. The difficulties have been overcome by the discovery and employment of salts obtained by the neutralization of sulpho-carbolic acid ($C_6H_6SO_4$) with the alkaline, earthy, and metallic bases. The first compound salt, sulpho-carbolate of potash, was obtained by Mr. Crookes, F. R. S. The author has succeeded in producing, in addition, the following salts, all having the characters of true double salts, and possessing brilliant and decidedly crystalline form: sulpho-carbolate of sodium, of potassium, of ammonium, of magnesium, of zinc, of copper, and of iron. An inquiry instituted with the view of determining the relative efficiency of the various salts in staying fermentative action established the following results:—1, the sodium salt; 2, magnesium; 3, potassium; 4, ammonium. It was shown from experiments upon the lower animals, as well as from the results of administration to the human subject, that the following was an outline of the plan of action of the sulpho-carbolates. They are absorbed with great rapidity, exert no toxic effect (the human subject readily taking drachm doses

every four hours), are decomposed in the system into—*a*, carbolic acid, which, traversing the system, is exhaled by the breath; *b*, sulphate of soda, which permeates the tissues, and is excreted by the urine. Though carbolic acid cannot be detected in the tissues after death, it is shown that an influence enabling the body to resist putrefaction has been exerted; the urine passed also resists decomposition. Prolonged courses of sulphocarbonate of sodium given for two months to phthisical patients show that the drug could be administered not only with impunity, but with considerable advantage. Of 35 cases, 13 greatly improved, 15 considerably improved; 9 cases gained in weight an average of 2½ lbs.—*Lond. Pharm. Journ., May, 1869, from Medical Times and Gazette.*

SPONGE TENTS.

By J. B. Hough, M. D., Ridgeville, Ohio.

Knowing the fact that absolute or *strong* alcohol will quickly set the fibres of common sponge, after having been moulded or compressed into any given size or shape, I was led to the following quick and easy method of preparing sponge tents, tampons, etc. :

The sponge is first thoroughly moistened with water and pressed as dry as the strength of the hand will permit; then having formed it into the desired shape and size by the hand, or by pressing it into a quill or any other tube or mould it is immersed into the alcohol. If the spirit is sufficiently strong, (90 to 100 pr. ct.) the sponge is *immediately* set into the given shape, which it retains perfectly after the pressure or mould is removed. It is then hard, firm and inflexible and may be trimmed to a sharp point or any other desired shape.

To restore it to its former size and shape it is only necessary to moisten it with a few drops of water. The alcohol sets the sponge perfectly, whether the amount of compression be much or little, so that the degree of dilatation, attainable by the use of tents thus prepared, will of course depend upon the size after moulding and the degree of pressure used. As this process of preparation works perfectly and *without delay* its advantages are obvious.—*The Cin. Lan. and Ob., July, 1869.*

CHLORAL—A NEW ANÆSTHETIC.

BY GEO. J. ENGELMANN.

Being at present engaged in the chemical laboratory attached to Virchow's Pathological Institute, it is with particular pleasure that I communicate to you an important discovery for which we are indebted to its chief, Dr. Liebreich.

Though Dr. L. has laid his discovery before the scientific men of Berlin, in both the Chemical and Medical Societies, nothing has yet appeared in print, and the hasty account cannot but be exceedingly unsatisfactory, yet I trust it will not be without interest, as being the first which crosses the Atlantic.

The researches of Dr. Liebreich have disclosed a new and, to all appearances, most valuable anæsthetic, which bids fair to rank with chloroform and morphia as one of the benefactors of suffering humanity.

Chloral (C_2Cl_3OH), the aldehyde of trichlorethted acetic acid, has indeed been known to chemists for perhaps the last thirty years, but its valuable medicinal properties have so far been utterly overlooked. It is a colorless fluid, of penetrating odor, but almost without taste, obtained by the action of chlorine gas upon alcohol, and is thus prepared in England on a large scale, being used for the manufacture of chloroform, as solution of caustic soda decomposes it, with production of chloroform and formate of soda

$$\left. \begin{array}{c} CCl_3 \\ COH \end{array} \right\} + \left. \begin{array}{c} H \\ Na \end{array} \right\} O = CCl_3H + \left. \begin{array}{c} COH \\ Na \end{array} \right\} O.$$

Upon this process the gradual decomposition of the soluble and readily absorbed chloral in the alkaline fluids of the body—this slow production of chloroform—probably depend its effects upon the system.

We may compare the action of chloral to that of chloroform inhaled in small continued doses; in some cases a slight headache followed, apparently less than is produced by morphia. Little can, of course, as yet be said from the few cases on record, though it has been given internally with success to patients in different departments of the Charité. A solution of the hydrate in an equal quantity of water has been used—the largest quantity as yet given being 4 grammes. 4 grammes of the solution

contain 2 grammes (32 grains) of the hydrate, and decomposed give 1 1-3 grammes, about 21 grains of chloroform.

Upon animals the injection has been used with most satisfactory results; drowsiness comes on, and soon perfect stupor. The effect is mild and gradual, not the least sign of a *stadium excitatorium*, so disagreeable in chloroform. This death-like stupor was prolonged, according to the strength of the dose, as far as 18 hours; upon awakening, the animal appears in full possession of his faculties, and at once feeds.

This anæsthetic is applicable, it would appear, in cases of insomnia from general suffering, mental excitement, and even in cases of insanity, where it has already been successfully tested. Though it cannot be expected to supersede either chloroform or morphine, differing from both in its effects; we may confidently predict for it a wide and important field of action, and American physicians will certainly not be behind hand in giving chloral a fair test.

So much, until I shall be enabled to send you Dr. L.'s publication.

BERLIN, June 8th, 1869.

—*St. Louis Med. and Surg. Journal*, July, 1869.

IMPROVED PREPARATION OF NEUTRAL ACETATE OF COPPER.

Five kilos. of sulphate of copper are ground to a fine powder; this having been done, the powder is placed in a suitable vessel, and 7.5 kilos. of liquid ammonia added thereto. After the solution is effected, 10 kilos. of acetic acid are added, and the vessel containing the copper solution placed on a water-bath; as soon as crystals are observed on the top of the liquid, the latter is strongly stirred, which promotes the formation of crystals. By this process, about 4 kilos. of neutral acetate of copper are obtained from the above quantity of sulphate, while the mother liquor yields some sub-acetate of copper afterwards.

—*Chem. News*, June, 1869.

SULPHUR IN LOUISIANA.

It is well known to the public that for some time past the work of boring for oil has been prosecuted in Calcasieu Parish, near Lake Charles, by an association under the title of "The Louisiana Petroleum and Oil Company." Recently, after reaching to a depth of 442 feet, the labors of the company were rewarded by finding a strata of crystallized sulphur some two feet thick and very pure in quality. In boring further, it was found that for a distance of 90 feet the augur passed through lime rock which yielded about fifty per cent. of sulphur, with occasional strata of 6 to 8 feet in thickness of pure sulphur. The treasurer of the company says that the boring has now reached to a depth of 600 feet. It is a great misfortune that the depth of these deposits of sulphur are so far below the surface of the earth, as the cost of mining will be so much enhanced in consequence. We learn, however, that it is the intention of the company soon to commence the working of these mines, trusting that the wealth to be realized from the sale of a commodity in such general demand and of so great a market value, will amply compensate for all outlays.—*The Canadian Pharm. Jour.*, March, 1869, from *New Orleans Price Current*.

APOMORPHIA, A NEW BASE DERIVED FROM MORPHIA.

In noticing the objects exhibited at the *Conversazione* of the Pharmaceutical Society in the last number of this Journal, we alluded to a new base which has recently been produced as the joint discovery of Dr. Matthiessen, F. R. S., and Mr. Wright, B. Sc., of St. Bartholomew's Hospital. We were then only enabled to state that this base was produced from morphia, and that it possessed the properties of a powerful non-irritant emetic and contra-stimulant. Since the publication of that notice a paper by Dr. Matthiessen and Mr. Wright has been read before the Royal Society, an abstract of which has appeared in the 'Chemical News,' and is as follows:—

"When morphia is sealed up with a large excess of hydrochloric acid, and heated to 140°—150° for two or three hours,

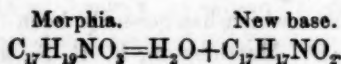
450 APOMORPHIA, A NEW BASE DERIVED FROM MORPHIA.

on opening the tubes after cooling, no gas is found to have been formed, no is there any formation of chloride of methyl. The residue in the tube contains the hydrochlorate of a new base, differing considerably in its properties from morphia. It may be obtained in a state of purity by dissolving the contents of the tube in water, adding excess of bicarbonate of sodium, and extracting the precipitate with ether or chloroform, in both of which the new base is readily soluble, whilst morphia is almost insoluble in both menstrua. On shaking up the ethereal or chloroform solution with a very small quantity of strong hydrochloric acid, the sides of the vessel become covered with crystals of the hydrochlorate of the new base. These may be drained from the mother liquors, washed with a little cold water, in which the salt is sparingly soluble, and re-crystallized from hot water and dried on bibulous paper or over sulphuric acid.

"This hydrochlorate contains no water of crystallization. After drying in the water-bath it yielded results on combustion with chromate of lead and oxygen agreeing with the formula $C_{17}H_{17}NO_2.HCl$.

"From a solution of the hydrochlorate in water, bicarbonate of sodium precipitates a snow-white non-crystalline mass, which speedily turns green on the surface by exposure to air, and is therefore difficult to obtain dry in a state of purity. This precipitate is the base itself.

"It hence appears that the new base is simply formed from morphia by the abstraction of the elements of water.



"We propose to call the new base apomorphia, for reasons given subsequently.

"When the hydrochlorate of apomorphia in a moist state is exposed to the air for some time, or if the dry salt is heated, it turns green, probably from oxidation, as the change of color is accompanied by an increase of weight. The base itself, newly precipitated, is white, but it speedily turns green on exposure to air. The green mass is partly soluble in water, communicating to it a fine emerald color,—in alcohol yielding also a

green tint, in ether giving a magnificent rose-purple, and in chloroform with a fine violet tint.

"The physiological effects of apomorphia are very different from those of morphia; a very small dose produces speedy vomiting and considerable depression, but this soon passes off, leaving no after ill effects,—facts of which we have repeatedly had disagreeable proof while working with it."

"Dr. Gee is now studying these effects, and has found that $\frac{1}{10}$ th of a grain of the hydrochlorate subcutaneously injected, or $\frac{1}{4}$ grain taken by the mouth, produces vomiting in from four to ten minutes. Our friend Mr. Prus allowed himself to be injected with $\frac{1}{10}$ th grain, which produced vomiting in less than ten minutes. From Dr. Gee's experiments on himself and others, he concludes that the hydrochlorate is a non-irritant emetic and powerful anti-stimulant. As from these properties it appears probable that it may come into use in medicine, we have called it apomorphia, rather than morphinine, to avoid any possible mistakes in writing prescriptions."—*Lond. Pharm. Journ.*, July, 1869.

INFLUENCE OF OIL OF SASSAFRAS UPON TOBACCO.

Editor Boston Journal of Chemistry :

The interesting article in the May number of the *Journal* reminds me of experiments made some years ago, when I was a smoker. I think I can suggest to your readers a more agreeable antidote, or denicotizer, than the tannic acid.

A valuable little "Treatise on Fever," by Dezin Thompson, Nashville, Tenn., contains the following statement :

"On one occasion, while waiting upon a tedious case of labor, I amused myself, along with the matrons present, in the enjoyment of the pipe rather freely, and suffered a good deal of vertigo as a consequence. In the course of the conversation which the incident gave rise to, one of the company observed that the dry bark of the sassafras combined with tobacco would prevent its unpleasant effects. On the first opportunity, I made the experiment, and found it true; the sassafras not only preventing the injurious effects of tobacco, but speedily removing them when produced. I tested this repeatedly by smoking in a strong

pipe until my head was very disagreeably impressed, and then reloading with a mixture of sassafras bark, a few puffs of which invariably dispelled the unpleasant sensations."

I have again and again, in my own person, verified the statement of Dr. Thompson; but have generally used the oil of sassafras, putting a few drops on the end, and allowing time for its absorption and diffusion through the cigar.

Is there any chemical analogy between oil of sassafras and tannic acid? Or is there any explanation of this identity of effect? Is their action purely chemical and on the nicotine? or is it physiological, and on the nerve-tissue?

Indulge me in some other extracts, which appear to me of great practical value, if true, in reference to the anti-narcotic and other powers of the sassafras:

"I added a drop of the oil of sassafras to every two grains of extract of hyoscyamus. Being very susceptible to the influence of nervous stimulants, I began by taking a common sized pill, and increased the dose until I took five at once, without producing any other effect than a most delightful sleep, such as I had not enjoyed since, when a child, I used to fall down under the shade of a tree when at play."

He made for a lady a syrup of butternut, containing sixty grains of hyoscyamus and thirty drops of oil sassafras to the half pint. Her little daughter, in the absence of the family, drank a quantity which "contained at least thirty grains. No injurious effects followed."

He gave to a negro suddenly seized with spasm in his presence, during the prevalence of cholera, a quantity of a like mixture, containing "forty grains of hyoscyamus. In a few minutes the spasm relaxed, and the man assisted all day in burying the dead."

"I had tested its power (oil of sassafras) fully in destroying the poison of insects and reptiles, such as mosquitos, fleas, spiders, bees, wasps, etc.; and, on one occasion, had an opportunity of testing its powers over the venom of the snake known as the copperhead, and found it succeeded promptly."

The little book from which the above extracts are taken was published ten years ago. I have seen no notice of it by the

medical journals. He writes like an accurate and truthful observer and narrator of facts, and it seems to me that the statements in reference to the properties of the sassafras are worthy of being known and tested. Let any one susceptible to the disagreeable influence of nicotine put a few drops of the oil on the end of a cigar, or on the tobacco in a pipe, and he will very soon be convinced that it is a complete antidote.

In making the experiment with the pipe, it is best to cover the oiled portion of the tobacco with some that is dry, or it will not burn so readily; or, if a blaze is used to light it, will burn too rapidly, and prove pungent and disagreeable. D. SHELBY, M. D.

HUNTSVILLE, ALABAMA, May 15, 1869.

—*Boston Journal of Chemistry*, July, 1869.

ON THE ALKALOIDS CONTAINED IN THE WOOD OF THE
BEBEERU OR GREENHEART-TREE (*NECTANDRA*
RODIAEI, SCHOMBURGK).

BY DOUGLAS MACLAGAN, M. D., F.R.S.E.,

Professor of Medical Jurisprudence in the University of Edinburgh;

AND ARTHUR GANGE, M.D., F.R.S.E.

In this paper the authors state the preliminary results of their examination of the bases contained in the wood of the greenheart-tree. When the wood is subjected to a process similar to that recommended in the British Pharmacopœia for the preparation of sulphate of bebeerina from the bark of the tree, a mixture of the sulphates of several bases is obtained. The product does not differ in a marked manner from sulphate of bebeerina as it occurs in commerce.

From the mixture of bases the authors separated, by repeated treatment with chloroform, a base which is very soluble in that menstruum. This base, when purified, occurs in the form of a white non-crystalline powder, possessed of an intensely bitter taste. It differs from bebeerina in the following particulars:—

1st. It fuses when placed in boiling water.

2d. It is much less soluble in ether than bebeerina. 100 parts of pure ether, of density 0.715, dissolve 0.96 part of bebeerina. 100 parts of the same ether dissolve .04 part of the new base.

3d. When treated with strong sulphuric acid and binoxide of manganese, a magnificent green color is first developed; this slowly passes into a violet of great beauty, not unlike that produced by the action of the same reagents on strychnine.

4th. The new base has a higher atomic weight than bebeerina. The mean of five determinations of the platinum in the platinum compound of this base showed the percentage of platinum to be 17.72. The mean of four ultimate analyses of the alkaloid gave the following numbers:—

	Calculated.	Found.
Carbon . . .	70.38	70.02
Hydrogen . . .	6.74	6.73
Nitrogen . . .	4.10	4.53
Oxygen . . .	18.78	18.71
	<hr/>	<hr/>
	100.00	100.00

To this new alkaloid the authors assign the formula $C_{20}H_{23}O_4N$ ($C=12$), and the name Nectandra.

The difference between the composition of bebeerina, as ascertained by Von Planta, and that of nectandra, may be seen by comparing their formulæ,—

Bebeerina	$C_{18}H_{21}O_3N$
Nectandra	$C_{20}H_{23}O_4N$

After separating nectandra from the mixed bases obtained from the wood, the authors succeeded in separating a base which is much more soluble in hot and cold water, and which is insoluble in chloroform. It is deposited from a boiling solution in the form of yellow nodules. Its taste is both bitter and astringent. It appears to have a lower molecular weight than either bebeerina or nectandra. The percentage of platinum in the platinum compound was found to be 20.3.

Besides this base the authors have ascertained the existence of a third, whose characters have, however, not yet been carefully determined.

The authors intended continuing their chemical investigations on these alkaloids, and examining their physiological and therapeutical action. They express their great obligations to the

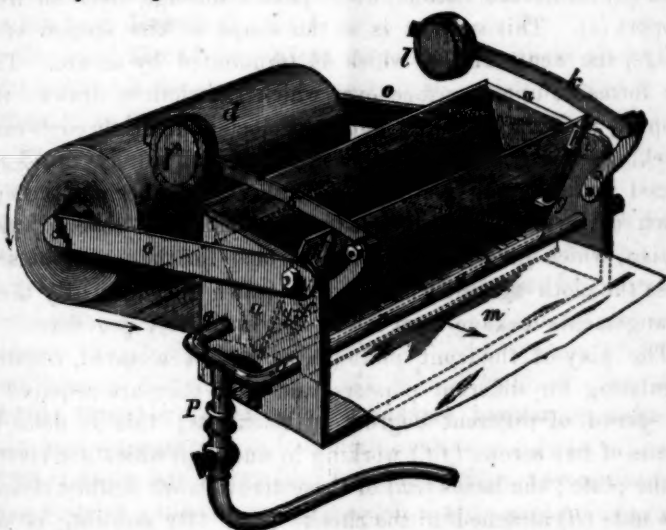
firm of Messrs. Macfarlane and Co., without whose generous aid the materials for the investigation could not have been obtained by them.—*Lond. Pharm. Journ.*, July, 1869.

A NEW PLASTER-SPREADING APPARATUS.

DEvised BY WILLIAM MARTINDALE.

Dispenser and Teacher of Pharmacy to the University College Hospital.

This apparatus consists of a trough with a false bottom, in which a series of jets from a Bunsen's burner are applied to heat the side plates, the cloth being passed under these to be covered with a layer of plaster.



- | | |
|--|--|
| <i>aa.</i> The "cheeks" or end of the machine. | <i>hh.</i> The heads of the screws. |
| <i>b</i> and <i>c.</i> The side-plates of the trough. | <i>ii.</i> Two threadless nuts. |
| <i>d.</i> The roll of cloth. | <i>kk.</i> The levers. |
| <i>e.</i> The support for the cloth and plates. | <i>ll.</i> Two moveable weights. |
| <i>ff.</i> The screws to regulate the front plate <i>b</i> . | <i>m.</i> The spread plaster. |
| <i>gg.</i> The nuts in which they work. | <i>n.</i> A roller on which the cloth is placed. |
| | <i>oo.</i> Two rests for this roller. |
| | <i>p.</i> The heating apparatus. |
| | <i>qqq.</i> Its two branches. |

The framework of the machine, made of cast-iron, has two

"cheeks" (*aa*) placed at right angles with the bottom. These cheeks form the ends of the trough. The interior of each has two grooves in which two wrought-iron plates (*b* and *c*) fit so as to allow of their being raised or lowered as required. The grooves of the back plate (*c*) are at an angle of 60° with the bottom, and in them the plate works of its own free gravity. The grooves of the front plate (*b*) are at an angle of 75° . The "play" of this plate is regulated as will be described. The edges of the plates at the bottom where they press upon the cloth are slightly bevelled. These two plates and the cheeks above mentioned form the sides and ends of the trough; the cloth (*d*) forms the bottom, as it passes through over an iron support (*e*). This support is in the shape of the section of a wedge, the acute end of which is terminated by an arc. The arc forms its upper surface over which the cloth is drawn; the support, as is shown in the figure, projects a little through each cheek, and is fitted accurately into its position by two keys placed under it, and resting on the cheeks, the borings through which correspond with its wedge-shape. It is covered with fustian, which gives it a yielding surface for the iron plates to press the cloth against whilst being drawn through. By these arrangements leakage from the trough is entirely prevented.

The play of the front plate (*b*), as has been stated, requires regulating for different plasters, and when they are required to be spread of different degrees of thickness; this is done by means of two screws (*ff*) working in nuts (*gg*) which are riveted to the plate; the heads (*hh*) of these screws work against threadless nuts (*ll*) attached to the cheeks (*aa*). By screwing or unscrewing these, the plate can be adjusted to spread any thickness of plaster. It will be observed that the screws can prevent the plate falling below any given depth, yet allow it to be raised to permit any inequality in the cloth, etc., to pass under it and again to resume its position. To assist it to do this, two levers (*kk*), with moveable weights (*ll*) attached, press upon the heads (*hh*) of the screws, and indirectly the pressure is exerted upon the plate, or the nuts (*ll*). For common strapping and plasters, which require to be thinly spread, the bolts are unscrewed so far that the heads of the screws do *not* rest on the threadless

nuts (*ii*), the plate therefore presses without any obstruction on the cloth, and, in addition to its own weight, pressure is exerted upon it indirectly by the weights and levers, as above stated. This plate is nearer the perpendicular than the back plate, because the spread-plaster (*m*) should be drawn through as nearly at right angles with it as possible.

The cloth being placed on a roller (*n*), which is suspended on two rests (*oo*), is passed through the bottom of the trough, taking with it a layer of the liquefied plaster (contained in the trough) as it is drawn off at (*m*).

By regulating the front plate with the screws (*ff*), skins, felt, or other thick material can be spread in the same manner as has been described.

The condition of the plaster, its temperature, and that of the plates suitable for spreading, are matters which require careful attention to produce satisfactory results.

The heating apparatus (*p*) is a Bunsen's burner with two branches (*qqq*), which perforate the cheeks at each end. Gas is supplied by means of an india-rubber tube. A stopcock regulates its admission through a small tube into the interior of the larger tube. Air is admitted to mix with the gas by holes near the bottom of this, the quantity being regulated by the usual nozzle. The mixture of gas and air is burnt in a row of jets in each branch directed against the plates (*b* and *c*); thus these and the liquefied plaster in the trough are kept at a nearly uniform temperature.

The burner can be detached and fitted into the machine inverted, so that, when not in use, the whole occupies but very little space.

Mr. J. H. Spencer, Southwark Bridge Road, constructed the apparatus under the direction and supervision of the inventor. *Lond. Pharm. Jour.*, July, 1869.

TINCTURA FERRI CHLORIDI.

BY JAMES W. MILL.

In view of the near approach of another revision of the Pharmacopœia, it is proper that individual experience in the preparation of its various compounds should be recorded.

Notwithstanding the flood of ferrated, ferro-phosphorated, and other fanciful elixirs and combinations of iron, which for the past few years has deluged the pharmaceutical market, the simple *Tinctura Ferri Chloridi* of the Pharmacopœia, for certainty and efficiency of action, has not yet been excelled, and despite its nauseous taste, is still much employed. Its easy and correct preparation, therefore, is still a matter of some importance.

Perhaps no preparation of the Pharmacopœia has given rise to more comment than this—indeed, the subject may be considered well-nigh, if not quite, exhausted. It is not, therefore, with the expectation of making any new revelations that the writer offers these remarks; his object is simply to give his own individual experience in the preparation of this tincture, hoping that to some one of the three thousand readers of *The Pharmacist* the revelation may not be altogether without interest. The writer does not wish to disparage the present official formula for this preparation. Properly executed, with due regard to the purity and strength of the muriatic acid employed, and its complete saturation, also the careful avoidance of loss during the frequent pourings, a correct result is obtained. Very strict attention, however, to these various details must be given, otherwise the resulting tincture will be imperfect. Particularly is it important to attend to the temperature employed to dissolve the iron. On this point the official formula is certainly at fault; it simply directs to heat it (the mixture of iron and acid) to the boiling point, then decant, etc. The complete saturation of the acid cannot be effected in this way; it is necessary that the temperature be *maintained* for some considerable time, longer or shorter, according to the quantity of material operated on. A careful manipulator would not, of course, be led astray by oversight in the formula; but the Pharmacopœia, being intended not alone for the scientific and expert, but for general guidance, should be so clear and explicit in its directions that the sin of an imperfect preparation may not justly be laid at its door. The writer, therefore, would erase the words "heat it to the boiling point," and substitute "apply heat, and having continued it till all reaction has ceased, decant," etc. The old formula for this tincture consisted in dissolving six troyounces of sub-carbo-

nate of iron in one pint of muriatic acid, and adding the solution to three pints of alcohol. It seems to have been a constant source of annoyance. The formula was evidently based on the use of the officinal sub-carbonate of iron, recently precipitated, in which state six troyounces would readily enough dissolve in a pint of muriatic acid. When, however, the sub-carbonate had been kept some time, and had become more or less completely converted into hydrated oxide, then the six troyounces would contain a much larger proportion of iron, and would, consequently, require a larger quantity of acid for solution. The formula made no provision for this change in the sub-carbonate, hence the whole trouble.

As an officinal process, however, for the preparation of Tinc. ferri chloridi, the experience of the writer leads him to regard the method of obtaining the necessary sesqui-chloride by the direct solution of sub-carbonate, or rather hydrated oxide, in muriatic acid, as, on the whole, preferable to that at present sanctioned by the Pharmacopœia.

The writer finds no difficulty in obtaining commercial sub-carbonate of iron that is perfectly soluble in the *proper amount* of muriatic acid, and sufficiently uniform in composition for all practical purposes. The following three samples will illustrate the various grades met with by the writer, and are believed to be a fair representation of the commercial character of this article:

No. 1. 100 grs. exposed to a red heat for half an hour, yielded 85 grs. sesquioxide, and was of a dark, reddish-brown color.

No. 2. 100 grs. ignited in the same way, yielded 83 grs. sesqui-oxide. Color was lighter than preceding.

No. 3. 100 grs. ignited in the same way, yielded 80 grs. sesqui-oxide, and was a shade lighter in color than No. 2.

An article labelled "Ferri Proto.-Carb. (?) Precip.," and put up in bottles, is also met with. It contains a large proportion of proto-carbonate, and is well adapted, doubtless to therapeutic administration. In the preparation of tincture, however, its use is not attended with any advantage, and being more expensive, it is here left out of consideration, reference being had only to

the article usually known as sub-carbonate of iron, and which is sold in the market at about 25 cents per pound. From the samples above given, the variation in sesqui-oxide strength, it will be observed, is only five per cent. The sub-carbonate has evidently been exposed to just sufficient heat to free it from its carbonic acid, without affecting its water of hydration, so that in composition it approaches very nearly hydrated oxide, ($\text{Fe}_2\text{O}_3 + 2\text{H}_2\text{O} = 98$), which contains 81.63 per cent. sesqui-oxide.

One equivalent or 80 grs. sesqui-oxide of iron, (Fe_2O_3) requires for conversion into sesqui-chloride, three equivalents, or 106.5 grs. chlorine (Cl), which amount, basing the calculation on the table given in the U. S. Dispensatory, is contained in 282.19 grs. muriatic acid 1.16. Six troyounces of a sub-carbonate like *e. g.*, No. 2, would give 2390.40 grs. sesqui-oxide, and would require 20 troyounces and 245 grs. of the same acid, 80:282.19::2390.40:10,025. Practically, however, a somewhat larger quantity is necessary to effect complete solution, and as an excess of acid in the tincture is considered desirable, a little more than enough simply to dissolve the sub-carbonate should be used. In the experience of the writer the following formula has proved successful:

R. Ferri Sub-carb.	.....	six troyounces.
Acid Muriat., C. P. sp. gr. 1.16	.....	twenty-three troyounces.

Introduce the sub-carbonate into a quart flask, add the muriatic acid, and having allowed the mixture to stand for a few hours, apply heat, and *boil* for a few seconds, then add sufficient nitric acid (more or less, according to the quantity of proto-chloride present, usually about half a fluidrachm,) to sesqui-chloridize the small quantity of proto-chloride present, or till the solution ceases to give either a blue or green coloration with ferri-cyanide of potassium. When the solution has cooled, add to it sufficient stronger alcohol to make the measure up to eighty fluidounces. This tincture has the sp. gr. 995, and is permanent. By calculation it would yield 29.88 grs. sesqui-oxide to the fluidounce, and is therefore a little stronger in iron than the officinal. Were it prepared from either of the other samples of sub-carbonate the variation would be a little greater; but even then so slight, as

not to be taken into account. Should exact accuracy be desired, the sub-carbonate can very readily be assayed; a careful ignition and weighing being all that is necessary. The muriatic acid employed should be the chemically pure; the ordinary acid being too much contaminated with sulphurous and sulphuric acids to produce a correct result. Perhaps the presence of tersulphate of iron in the tincture might not be regarded as a very serious impurity, but it can be so easily avoided, and the purity of the tincture guaranteed, by the use of chemically pure muriatic acid, that the small extra outlay (about 10 cents per pint) is not worthy of mention.

The writer has thus, very imperfectly, it is true, laid before the readers of *The Pharmacist* his individual experience in the preparation of this tincture; will not some of them reciprocate by giving him the benefit of *their* experience in the preparation of Pharmacopœia or other compounds, and thus, at the same time, help to make *The Pharmacist* what it is intended to be—a sort of mental exchange for the relation of experiences, and the comparison of views and opinions on all subjects connected with the Pharmaceutical interests.—*The Pharmacist*, June, 1869.

POISONING BY SUBSTITUTION OF CYANIDE OF POTASSIUM FOR CARBONATE OF AMMONIA.

Inquest held in Dublin on the late Mr. F. Grattan Guinness, 7th and 8th of June, 1869.

The above case of accidental poisoning has created in Dublin intense excitement, partly from the rarity of such accidents in Ireland, and also from the social position which Mr. Guinness held. The inquest extended over two days. Mr. C. Swayne, the assistant who compounded the medicine, was in custody during the first and part of the second day's proceedings. He was an assistant to the firm trading under the name of Hamilton, Oldham, Long, and Company, who have two establishments in Dublin, and are now about to open another at Kingstown. Mr. Darley, Q. C., appeared for the relations of the deceased, and Mr. Macdonogh, Q. C., represented the firm in whose establishment the mistake occurred.

The first witness called was Mr. Edward Sadlier, clerk to the Messrs. Burke, wine merchants, 16 Bachelor's Walk. He deposed that on Saturday, the 5th of June, the deceased gentleman, who had an office in the same house, came there; on the previous day he told witness to send the two empty bottles that were on his desk to Oldham's, to have them filled with the same mixture that had been in them before; witness sent the bottles by one of the porters, named Lynham; when witness came to the office on Saturday morning he found two bottles papered up, sealed and directed to the deceased; later in the day he saw the deceased with a bottle in his hand, which he held up to the light, and said, "This is not the same they gave me before; what I got before was brown; I am sorry I did not show it to Dr. Bourke before he went." He then opened the bottle and put it to his mouth. Witness said to him, "You had better not take it, take care." Soon after he left the room and went into his own, and the deceased went out of the office, and came back in, perhaps, half an hour; the deceased then had a bottle containing a brown fluid in his hand; he said, "They have given me another bottle." The bottle containing the brown fluid was a different one from that which he had at first. Witness then went into his own office, and deceased soon came in, and went to the opposite side of the desk at which he was standing, and said, "It is choking me! It is choking me!" He made a peculiar moan, as if his throat was affected. Mr. John Burke came in from the store at the moment, and witness said to the deceased, in his presence, "Take care; have they given you poison?" He then went into Mr. Burke's office; Mr. John Burke came running in, and said, "Run for Dr. Bourke! Witness ran to the stores, and sent a vanman for the doctor; witness went to Butler's, in Sackville Street, and brought one of the gentlemen from that establishment. When they came back, the deceased had been brought into a back room, and he found that he was dead.

Dr. W. Bourke said he had known the deceased from his childhood, and was his medical adviser. On the 25th of May had prescribed for him a strengthening mixture, which was prepared at Oldham and Co.'s in Grafton Street. He had been in a

low, weak state, and suffered especially from a weak action of the heart.

Mr. Edward Long, a member of the firm of Hamilton, Oldham, Long and Co., explained the circumstances under which the mistake had occurred. It appeared from the evidence of this witness, and that of the porter, George Hudson, that it was the practice of the firm, in replenishing bottles from the stores, to have a double check against mistakes, by requiring that the empty bottles should be filled in the presence of two persons. In this instance, however, the rule had been departed from. The assistant, Mr. Swayne, finding the carbonate-of-ammonia-bottle empty, gave it to George Hudson, the porter, to be filled, but did not see it filled. The porter found a stone-jar at the top of the stairs, containing a white salt, which he thought was carbonate of ammonia, and with this the bottle was filled. The jar had no label to it, and proved to contain, not carbonate of ammonia, but cyanide of potassium. This was used by the assistant in preparing Mr. Guinness's medicine, which should have consisted of infusion and tincture of bark, cinnamon-water, and carbonate of ammonia, to be taken with lemon-juice. The dose taken by the deceased contained twenty grains of cyanide of potassium. It was stated that Mr. Swayne, the assistant, was busily engaged in dispensing, and was therefore unable to accompany the porter in filling the empty bottle; also that the bottle into which the cyanide of potassium was put, retained sufficient ammoniacal smell to disarm suspicion which would have arisen from the absence of this character. On the explanation of these circumstances, Mr. Swayne, who was previously in custody, was set at liberty before the conclusion of the inquiry.

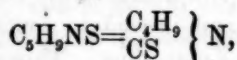
"The jury after a lengthened investigation, returned the following verdict:—

"We find that Frederick Darley Grattan Guinness accidentally came by his death, on Saturday, the 5th day of June, 1869, from a dose of poisonous medicine, compounded by mistake at the establishment of Messrs. Hamilton, Oldham, Long and Company, No. 107 Grafton Street, and we consider that there was not sufficient circumspection taken there for the public security, on which account we strongly urge the necessity of strict pre-

caution being observed by the firm, against whom we feel obliged to record our deep censure."—*Lond. Pharm. Journ. July, 1869.*

ESSENTIAL OIL OF COCHLEARIA OFFICINALIS.

It appears that this essential oil has been frequently confused with the essential oil of mustard, from which the author (Dr. A. W. Hofmann), on experiment, found it essentially different. The boiling point of the oil of *Cochlearia* is at about 160° C., that of the genuine oil of mustard at 147° C. On being treated with ammonia, the essential oil of *Cochlearia* yields a beautifully-crystallizing substance (the thiosinamin of the essential oil of *Cochlearia*), which fuses at 135° C. Analysis of the oil and the ammonia compound just alluded to, prove the oil to be the mustard oil (*Senföl*), of the butyl series—



When butylamine (prepared from butyl alcohol by fermentation) is treated with sulphide of carbon and chloride of mercury, a mustard oil is obtained of the same composition and about the same boiling point, but the odor indicated that only an isomeric substance had been obtained, and further research proved that the ammonia compound of the oil, thus artificially produced, had its melting point at 90° C. The author intends to proceed with researches on this subject.—*Chem. News, June, 1869, from Berichte der Deutschen Chemischen Gesellschaft zu Berlin.*

ON THE GROUND NUT ARACHIS, HYPOGÆA.

M. F. A. FLÜCKIGER.

This is a monograph on the subject, and includes the origin, discovery, occurrence, and commercial history of the fruit of a plant belonging to the natural order of the *Leguminosæ*. The fruit is known, in English language, as ground-nut, earth-nut, pea-nut and manilla-nut; in French as *orachide*, or *pistache de terre*. The plant which yields this fruit is a native of tropical and sub-tropical regions, and belongs especially to Africa. The average weight of the seeds contained in the fruit and bearers of the oil

is 0.5 grm.; they yield from 38 to 50 per cent. of oil, which consists of a mixture of glycerin compounds and three different fatty acids, arachinic acid $C_{40}H_{80}O_2$, fusing at $75^{\circ}C.$; hypogœic acid, $C_{32}H_{64}O_2$, fusing at $35^{\circ}C.$; and palmitinic acid, $C_{32}H_{64}O_2$, fusing at $62^{\circ}C.$ The seeds contain 28.85 per cent. of proteïn compound, 13.87 per cent. of woody fibre, and 7.16 per cent. of gum and sugar.—*Chem. News, June, 1869.*

DETECTION OF PRUSSIC ACID IN THE BLOOD.

In an article* on the toxicological investigation which took place on the murder of the Countess Chorinsky, M. Buchner gives some interesting remarks on the detection of prussic acid in the blood. In this case the blood was of clear cherry-red, and preserved this tint for several days. At the end of five days it was still perfectly liquid, and some weeks elapsed before it gelatinized. It resisted putrefaction for a long time when preserved in a stoppered bottle, but the red globules were destroyed in a few days. It presented no odor of prussic acid, but when diluted with water and distilled, the first portions of the distillate possessed a distinct smell of the poison, and gave positive results with the usual tests. By this means the acid was detected, even after the lapse of fifteen days. M. Buchner found Liebig's test (sulphide of ammonium) to be the most delicate.

Several years ago, Schönbein showed that the blood globules decompose oxygenated water, liberating ordinary oxygen; but the blood diluted with twice its volume of pure water, and containing a small quantity of prussic acid, loses almost entirely this catalytic action, while the mixture assumes a deep brown color. This reaction affords the means of recognizing an infinitesimal quantity of prussic acid. Thus, if 50 grammes of defibrinated ox-blood be mixed with 450 grammes water and 5 milligrammes of anhydrous prussic acid, the mixture becomes deep brown in presence of oxygenated water. In this case Buchner found Schönbein's test to be a very delicate one. The blood,

* 'Revue des Cours Scientifiques' and Jour de Pharm.

however, should not be very old, because then the blood has attained a deep color, which the oxygenated water does not change.—*Pharm. Journ., London, July, 1869.*

NITROPHENIC ACIDS.

By JOSEPH HIRSH.

Ever since the discovery of the valuable antizymotic and disinfecting properties of carbolic acid, its production in the highest degree of purity has been aimed at, and, luckily, with signal effect. The good fortune of producing this substance perfectly pure does not consist in the sought-for acquisition of the *ne plus ultra* disinfectant which its final purity promised, but rather in the discovery that its accompanying sister alcohols of the cresylic and xylic series, rejected so far as worthless, cumbersome appendages, possess superior antizymotic qualities, and the numerous good results ascribed to the use of carbolic acid were in reality due to the presence of the other alcohols mentioned, which even to-day may be found in the bulk of the carbolic acid in market, of which the perfectly pure fills only a portion. In practice, the dark, impure creosote was preferred to the light colored, even before the above constituents of the same had been thoroughly studied; experience having demonstrated the result, not yet viewed by the light of science.

Of equal date with the birthday of the fame of carbolic acid as a disinfectant, are the last honors paid to chlorine, nitric acid, and their compounds for the same purpose; and they are only employed where their low price is an offset, though a questionable one, to the use of phenic acid. It has even been stated that, as a disinfectant, carbolic acid and the mineral acids mentioned should never be used jointly; the suggestion having been made, *a priori*, from the consideration that in such a union the carbolic acid would lose its individuality. This reasoning was correct, but it lacked the basis of experiments to prove that the resulting compound did not possess the azymotic effects of carbolic acid to a considerable extent.

Having last year experimented on the *modus operandi* of carbolic acid (a brief review of the experiments having been pub-

lished in the April number of the *Chemical News*), I instituted a series of similar experiments with binitrophenic acid, determining the comparative amount and rapidity of coagulation of albumen from different sources, with the acid in various degrees of dilution. A solution of the acid in ten thousand parts of water produced in bloodserum a coherent film of coagulum, while the same solution of carbolic acid produced only turbidity, the turbid liquid passing partly through a filter.

If the property to coagulate albumen is taken as the *modus operandi* of carbolic acid, against which suggestion no serious objection seems to have been raised, the production of the same result by another substance should recommend the latter for the same purpose. The nitrophenic acid seems not only to coagulate albumen readily, but in a dilution of 1-100,000 it produces that loose, cloudy coagulum which carbolic acid shows in a solution of ten times greater concentration.

To test its effect upon the lower classes of animal life, a tub (half a barrel) was set aside for a few days, in a warm room, its bottom covered an inch high with blood. The decomposition of the latter had progressed so far that the sides of the tub were literally covered with white maggots, some of them measuring five-eighths of an inch in length, and one-thirty-second of an inch in diameter at their thickest extremity, that of the head. The countless smaller ones showed, by the billow-like motion of the whole mass, that they were full of life and vigor, and of promise of increase. A solution of one per cent. of nitrophenic acid was brushed on the inside of the tub, in the evening, very carefully. This did not seem to disturb the good humor and activity of the creatures, for they moved along as lively as ever. But the next morning the sides of the tub were perfectly clean, the worms having retreated to the centre of the tub, where they all lay dead, in one heap, in the blood. After the lapse of some weeks the same blood showed no sign of renewed life, nor the unpleasant odor of decomposing animal matter. The preparation used was the binitrophenic acid, prepared from the crude carbolic acid. It possessed the aromatic, pleasant odor, reminding faintly of nirobensol, and due probably to the presence of this substance in minute quantity. This pleasant odor is certainly a valuable

property of a disinfectant, when we consider how sensitive many persons are to the odor of even the pure carbolic acid, and how much more they abhor that of the impure, often surcharged with hydric sulphide. A disadvantage to the nitrophenic acid is its color; but, as it can be used in much greater solutions than the carbolic acid, this ought hardly to be objectionable, especially as in many preparations habit has befriended us with dark color, which then we rather like. The agreeable odor is especially and perhaps only present if the preparation is made from the impure carbolic acid, which also has the advantage of economy.

Although the above experiments refer only to the binitrophenic acid, I do not hesitate to assume the same superiority for the other nitro-compounds. We have the trinitrophenic or picric acid, the value of which in malarious fevers has often been tested, and ranked with that of quinia. The temporary yellowness which it imparts to the skin renders it an undesirable substitute for quinia. Perhaps in many instances it has failed to give relief, but the same objection has been made to quinia. The chlorophenic and sulphophenic may, by analogy, be expected to act with more energy than carbolic acid; but I reserve remarks on the same until I have finished my experiments in this direction.—*The Pharmacist, Chicago, August, 1869.*

AMERICAN PHARMACEUTICAL ASSOCIATION.

The 17th annual meeting of the Association will be held in Chicago, on the 7th day of September next, at 3 o'clock P. M. The specific place of meeting, and the arrangements for the accommodation of those in attendance, will be announced by the Local Secretary. As this will be the first meeting held in the metropolis of the Northwest, and will probably attract much attention in that section, it is earnestly desired that a large and widely diffused representation of the membership will give evidence of a continued and growing interest in the Association. Druggists and pharmacists eligible for membership are invited to present themselves as candidates, and thus aid in extending the Association and increasing its influence.

PHILADELPHIA, 6th mo., 1869.

EDWARD PARRISH,
President.

Editorial Department.

THE CHICAGO MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.—Every thing promises fair for an interesting meeting of the Association. The information needed in our last is supplied by Mr. Albert E. Ebert, Chairman of the Reception Committee, and we have copied it below. Knowing the advantage of co-operation in getting a reduction in railroad fare to members on these annual occasions, Mr. William Wright, of New York, has interested himself in the matter, and by a circular gives the information that an arrangement has been made with the Erie and Lake Shore Railroads by which members will be taken to Chicago, via Buffalo, leaving New York on Saturday morning the 4th inst. at 9 o'clock, reaching Buffalo that night; stopping over till Monday morning, so that an opportunity will be afforded to visit Niagara Falls on Sunday; and arriving in Chicago Tuesday about 6 P. M. The tickets for the excursion to and from Chicago, good to the 28th of Sept., cost 25 dollars each person. Those desiring to take part in it are requested to address Mr Wm. Wright at once, enclosing \$5, and paying balance at the time of starting. So far as we have been informed the prospect of a numerous attendance from the Eastward is favorable.

SEVENTEENTH ANNUAL MEETING TO BE HELD AT CHICAGO, SEPT. 7TH, 1869.

CHICAGO, July 15th, 1869.

RESPECTED SIR:—The seventeenth annual meeting of the American Pharmaceutical Association will convene in this city, in the Hall of Lombard Block, on Monroe Street, corner of Custom House Place, on Tuesday, September 7th, 1869, commencing at three o'clock P. M. A cordial invitation from the Chicago College of Pharmacy and the Pharmacists of this city is hereby tendered to all members of the Association, and others of the profession, to visit Chicago at that time; and it is hoped that the sessions of the Association will be a profit and pleasure to all who can avail themselves of the opportunity.

In accordance with the custom of former meetings it is desirable that members, as much as possible, be located at the same hotel. With this object in view, the committee have selected the Tremont House, as the headquarters of the Association during its sessions. Parlor No. 1 of this hotel will be reserved for the use of the members, where a registry will be kept, and a Committee of Reception be in attendance for the purpose of giving the necessary information to visitors. A reasonable deduction

from the usual rate of board has been arranged for. Visitors, in placing their names upon the hotel register, will therefore affix the initials "A. P. A." in addition to their signatures. The seventeenth annual meeting, it is expected, will be the most important in its bearing upon Pharmacy that has ever been held. The important question of the legal aspect of Pharmacy will be carefully considered, and some definite action probably taken thereupon.

The proximity of the decennial revision of the United States Pharmacopœia will also give importance to the deliberations of the convention. Essays and volunteer papers, and applications for membership may be sent to the undersigned. Specimens of materia medica, chemical and pharmaceutical preparations, plants, apparatus, etc., are solicited for exhibition, and may be sent to Henry W. Fuller, local secretary of the American Pharmaceutical Association, in care of Fuller, Finch & Fuller, No. 24 Market street.

As this will be the first meeting of the association in this section of the country, it is hoped that a large representation of Western druggists will be brought together.

I am, sir, yours truly,

ALBERT E. EBERT,

Chairman of the Reception Committee, cor. State and Twelfth streets.

ST. LOUIS COLLEGE OF PHARMACY.—We are informed by JUSTIN STEER, *Secretary*, that at a meeting of the St. Louis College of Pharmacy, held June 28th, 1869, the following members were elected as delegates to the meeting of the Association, to be held at Chicago, Sept. 7th next, viz. :—

Dr. J. S. B. Alleyne,
Dr. O. F. Potter,
Dr. C. L. Lipps,
Mr. A. H. Weber,
Mr. Wm. H. Crawford.

THE PRESCRIPTION OF EXPLOSIVE MIXTURES BY PHYSICIANS.—A correspondent who feels himself much aggrieved, informs us that a few months since he suffered severe personal injury by the explosion of the ingredients of a prescription, of which the following is a copy :—

"R	Potassæ Chloratis	℥iss.
	Acidi Tannici	℥iss.
	Olei Gaultheriæ	gtt. xx.

Mice ft Pulvis I

Sig. Put in a quart of water."

It appears that this mixture had been repeatedly dispensed without ignition, but on this occasion the physician called and requested double the quantity to be prepared, and the pharmacist accidentally used on this occasion a new *wedgewood* mortar, with rough surface, first powdering the chlorate and then adding the other ingredients, and continuing the trituration—when a violent explosion occurred, injuring his hands and burning his face and eyes seriously. Our correspondent believed that the physician was aware of the explosive nature of the mixture, as he is reported to have said immediately afterwards "*that he knew that the mixture as ordered would explode,*" he being the first physician called in. If this was true, it leaves an inference of motive in regard to the prescriber not to be envied. It would have been quite right to have given a caution to have saved himself from the charge of ignorance or design. Our correspondent, smarting under the *effects*, may be warped in his feelings toward the prescriber. With this *we* have nothing to do, but may embrace the occasion to offer to our readers who are not posted in such matters, a caution that any organic substance having a large equivalent of loosely combined elements like sugar, tannin, several of the glucosides and other neutral bodies should always be mechanically united with chlorate of potassa with great caution, and the chlorate should be powdered alone and then mixed with the other ingredients, *separately powdered*, on paper. Physicians, where they require such mixtures, and themselves are aware of the danger, are not without culpability if they prescribe at random, without due precaution, on the presumption that every dispenser is a thorough chemist. If, as is more frequently the case, they prescribe in ignorance of the incompatible character of the ingredients, they of course are not to blame. When such ingredients can be mixed without damage, every apothecary *ought* to be able to do it, yet ignorance of particular reactions in such a case should not necessarily be considered unjustifiable ignorance. We have had this accident to occur under our own supervision, but the operator being aware of the liability, used precautions that enabled him to escape uninjured.

THE PHARMACIST.—We are in receipt of two numbers of the new volume of this Journal, now under the editorial supervision of our friend Albert E. Ebert, Mr. Sargent having virtually retired as he announced. The Pharmacist sustains its character so well begun in the first volume. The present Editor has the energy, perseverance and knowledge requisite to make it a first-class journal, and the *business* men of Chicago have shown their tact in transferring its support from the subscribers to the advertisers, its subscription being remarkably low. The advertising sheets, therefore, are a very important part of the issue, and are Edited, we presume, by Mr. T. Whitfield, of Chicago. This plan of having a business editor for the advertising department, carried out so success-

fully by the Pharmaceutical Journal of London, is well worthy of imitation where this feature is depended upon for income.

UNIVERSITY OF MICHIGAN SCHOOL OF PHARMACY.—This school, under the direction of Prof. Silas H. Douglass, is gradually raising itself into notice. We cheerfully give place to the following note and list as bearing on pharmaceutical progress. We are not well assured of the preliminary requirements of this school as regards practical training in the shop, and hence do not know the real value of the diploma granted. In this country the words "pharmaceutical chemist" have no meaning beyond the other terms used to express the business or profession of a pharmacist. But in England they apply only to the members of the Pharmaceutical Society who have complied with the Act of Parliament, and can be used by no others under penalty. If the Michigan students are apothecaries who go there from the shop to get their laboratory education it is all well, but if any one without other training in pharmacy than is obtainable at the University School is pronounced a qualified apothecary, it should be known and appreciated. An apothecary without shop experience is like a medical graduate without hospital or other practice. They are both of doubtful reliability.

UNIVERSITY OF MICHIGAN, }
Ann Arbor, July 5th, 1869. }

Editor American Journal of Pharmacy,

DEAR SIR,—I send you herewith a list of the (23) graduates of the Pharmacy Department of this University, who received the diploma of "Pharmaceutical Chemist" at the annual commencement, June 30th. This class of 1869 is the first of its kind graduating, and receiving this diploma, at this Institution.

The course of study required of candidates for the diploma comprises: Lectures in Inorganic and Organic Chemistry, Materia Medica, and Principles of Pharmacy; with laboratory courses in Qualitative Analysis, Toxicology, Analysis of Urine, Volumetric Analysis, and a somewhat extended course in Pharmaceutical operations. Also class exercise in Botany.

Very respectfully

A. B. PRESCOTT,
Assistant Prof. and Secretary.

Christopher F. Arnold, Vallejo, Cal.	. . . . .	The Atmosphere.
Hale Bliss, Chicago, Ills.	. . . . .	Potassium.
Edmund M. Bloomfield, Eaton, O.	. . . . .	Percolation.
Eugene Boise, Oberlin, O.	. . . . .	Glycerin.
Marvin T. Case, Attica, Ind.	. . . . .	Fluid Extracts.
Samuel Covert, Pontiac, Mich.	. . . . .	Glycerin.
Henry D. P. Cushman, Albion, Mich.	. . . . .	Potassium.
Asa L. Fox, Marshall, Mich.	. . . . .	Alcohol.
James M. Ford, Wabash, Ind.	. . . . .	Cinchona.
Edwin L. George, Dover, N. J.	. . . . .	Iodine.
Edgar L. Henning, Plano, Ills.	. . . . .	Distillation.
LeGrand H. Hollon, Sand Bank, N. Y.	. . . . .	Hydrargyrum.
Charles H. Hood, Ann Arbor, Mich.	. . . . .	Fluid Extracts.

John W. Jarvis, Erie, Pa.	Vegetable Astringents.
William F. Maltbie, Springborough, O.	Pharm. Education.
Lurnan G. Moore, Kinsman, O.	Ferrum.
James C. Neal, Marion, Ind.	Papaver Somniferum.
John F. Oakes, Rochester, N. Y.	Adulterations.
Robert G. Rex, Richmond, O.	Elimination of Elements.
William G. Rouse, Detroit, Mich.	Medicine and Pharmacy.
John A. Rutan, Libertyville, N. J.	Disinfectants.
Alphonso Sadler, Milburn Ills.	Cinchona.
Eugene M. Stanton, Rochester, Min.	Opium.

PHARMACY IN CALIFORNIA.—Through a copy of the *Daily Alta California* of San Francisco, of July 29th, sent by Mr. J. G. Steele, we learn that

"At a general meeting of the apothecaries of San Francisco, held last evening in the rooms of the Fourth District Court, City Hall, the following gentlemen, representing the retail drug trade, were present: Messrs. H. W. Bennett, James G. Steele, G. G. Burnett, Mayhew & Wenzell, Charles D. Zeile, F. Victor, Geo. H. Clapp, W. C. Miller, J. Barbat, J. W. Rule, C. F. Richards, S. M. DeSolla, John McCartha, Justin Gates, Edward McCann, Painter & Calvert, Edward Neuman, Charles E. Hinckley, Henry Adolphus, F. Gros, Wilson & Co., J. Tothill, J. W. Reynolds, J. L. Downing, E. J. Richards, W. H. Byran, J. W. Van Zandt, Jr., Edward Petibean, Craig & Holtz, Flynn & Abramson, J. K. Moor, C. Wilhelm & Co., R. W. Coffin, Chas. Roturier, V. Polastri and A. McBoyle & Co.

Mr. James G. Steele having called the meeting to order, Mr. Simpson was duly elected Chairman, and Mr. McBoyle, Secretary.

The Chairman made the following remarks, which were well applauded: 'Gentlemen: We are assembled together for the purpose of organizing ourselves into a society. The necessity of such an organization is so apparent that I need scarcely allude to it. We claim, gentlemen, to be engaged in an occupation more responsible and more serious than any under the sun. In no business on the face of this earth is there so much opportunity for wrong doing, and none in which the public is obliged to rely so implicitly upon the honesty and good faith of its members. In this State, without any legislative restrictions, and having no Pharmaceutical Society, organization or college, it might be supposed, reckoning upon the all-prevailing human frailty, that many practices would intrude themselves into the business not considered either honorable or professional in the older societies elsewhere. We have to congratulate ourselves, however, that with as little incentive to study and the almost entire absence of an emulation to succeed in the scientific or higher branches, our occupation on this coast should maintain even the position it does. The primary objects of our organization will no doubt be to institute the largest professional skill, the greatest integrity in our dealings with the public, and the highest honor among ourselves, by a closer intercourse and communion. Let us cultivate amiable and kind feelings, and bear in mind that whatever professional envies exist among us belong exclusively to the shop, and have no room in our deliberations here.'

After some interesting debate, which was entered into with much zeal by many present, the following Committee was chosen to draft a Constitution and By-Laws, to be submitted at the next meeting: Messrs.

Simpson, Steele, Calvert, Wenzel and Downing. It was also resolved that the present Chairman and Secretary be continued in their respective offices until a permanent organization could be effected and the various officers elected.

After various remarks from members present relating to a permanent association, the meeting adjourned to meet at the same place at 8 o'clock on Monday evening, August 9th."

It is probable that this meeting will result in an organization, and possibly in time to send delegates to the Chicago meeting.

BRITISH PHARMACEUTICAL CONFERENCE.—The circular issued by the general Secretaries, calling the Sixth Annual Meeting of this body, has been received, and before this number is printed the meeting will have taken place, on the 17th of August, under the presidency of Mr. Daniel Haubury, at the old City of Exeter, in the South of England. We learn by the circular that it is proposed, as a new feature, to issue "an Annual Report on the Progress of Pharmacy, which shall include notices of all Pharmaceutical papers, formulæ, &c., published in the various pharmaceutical journals of Europe and America." This, if well carried out, will prove useful to the members, as by the present extreme exclusiveness of the English Pharmaceutical Journals, the pharmacy of the United States is almost unknown to the great majority of the pharmacists of England, and the same is true of much that is Continental. Percolation and other processes of extraction are probably far better known to the mass of pharmacists in the United States than to those of Great Britain, and in some other things—suppositories, for example—they would not retrograde by a more intimate acquaintance with the interior of Pharmacy in America.

The new pharmacy Act will have had some influence on the results of this meeting; bringing in a larger membership and greater interest in science. The circular says nothing about an exhibition coetaneous with the meeting, and the presumption is that for the present that feature will be dropped. We shall look with great interest for the proceedings in the next English Journals.

PHARMACEUTICAL INSTRUCTION IN PRUSSIA.—We learn through the *Pharmaceutische Zeitung* of June 19th, the following information concerning the study of pharmacy at the University of Jena. It would present a formidable beginning to our students if such a programme was presented at the outset of their studies. The young student has to apply to the director of the Pharmaceutical Institute, at present Prof. Dr. Ludwig, and present his testimonials of apprenticeship and clerkship; after a short examination he receives a testimonial of qualification which entitles him to matriculation, and this to all the academical rights of the students of this University.

The course is annual, and the students attend during the winter session lectures on, 1, pharmacy; 2, the first part of phytochemistry and chemical pharmacognosy; 3, the first part of analytical chemistry; 4, stoichiometry; 5, experimental natural philosophy; 6, botanical pharmacognosy; 7, zoology; 8, inorganic chemistry and stoichiometry; 9, pharmaceutical materia medica, (Waarenkunde). There are also held examinations and repetitions, and practical instruction is given in pharmaceutical and analytical chemistry under the supervision of the director and his assistant.

During the summer session the following branches are taught: 1, general chemistry; 2, the second part of phytochemistry and chemical pharmacognosy; 3, zoochemistry; 4, the second part of analytical chemistry; 5, forensic chemistry; 6, mineralogy and geognosy; 7, general botany combined with botanical excursions; 8, systematic botany and practical analysis of plants; 9, history of chemistry and pharmacy; 10, examinations, repetitions and practical instruction in the laboratory. The students may attend other lectures or leave out a portion of the above to attend at a third or fourth session.

After completing the annual course, the students have more time to devote to the laboratory, to examinations and repetitions; candidates usually enter well prepared upon the final examination after three sessions. Besides the use of the university library, the students will find rich and well selected collections of drugs, minerals, pharmaceutical and chemical preparations.

THE NEW AUSTRIAN PHARMACOPEIA.—This new codex is written in the Latin language and does not contain the German names of the drugs and preparations. The gramme weight has been introduced in place of the ounce and pound, which must be regarded as an acceptable step towards a more general uniformity, since the Austrian apothecaries have had occasion to observe that the introduction of this weight into the pharmacy of north Germany has proved much easier than had been previously supposed.

In regard to the nomenclature, the collective divisions, such as roots, leaves, flowers, &c., have been discontinued; the name of the article is now given in alphabetical order, which is followed by the botanical name, natural order, habitat, and the officinal part of the plant, for instance: *Calamus*, *Acorus Calamus*, Linn., planta perennis, in Asia indigena, nuncin. . . . *Aroideæ*, *Rhizoma* (*Radix Acori*, *Rad. Calami aromatici*); this is followed by the description, and finally the preparations are mentioned into which the drug enters.

The nomenclature of chemical preparations remains unchanged, except that the names of the alkalis, alkaline and true earths have been substituted by the names of the elements; magnesia is *magnesium hydrico-oxidatum*.

About 40 new articles have been introduced, mostly chemicals; of drugs only guarana, helleborus viridis, kamala, thea. Nearly 250 articles have been dropped, among them acid. benzoic, hydrocyanic and succinic. ammon. carbon. oleos. and succin. oleos., about 20 distilled waters, bulb. colchici, castoreum, extract. cascaril., digitalis, rhei, valerian and others, morph. acet., moschus, vanilla, zinci valerian. No processes are given for the chemicals which are usually obtained from manufacturers, but the test for their recognition and purity are mentioned.

The work is concluded by a list of chemical reagents and utensils, and by tables on the comparison of weights, specific gravities, solubilities, strength of acids and alkalies, atomic weights and maximum doses. The index contains all the synonyms.—*Pharmac. Zeitung*, 1869, W. 56.

GELATIN-COATED PILLS.—Cauhape & Co., of New Lebanon, Columbia County, New York, have sent us a box of the gelatin pills of their manufacture. The pills are oval in shape, weigh about seven grains, and the label says each pill contains six grains of the compound cathartic pill mass of the U. S. Pharmacopœia, which is called a dose. On cutting a pill open the gelatin sack was found very thin but firm, and the pill itself made intentionally ovoid to facilitate swallowing; the interior retains its softness and the coating is warranted to remain *perfectly soluble* in any climate. We are not disposed to give any opinion about them that might be construed improperly. The coating of pills with gelatin was suggested by M. Garot in 1838 (see Vol. X of this Journal); and we used it for the purpose more than twenty-five years ago, hence these gentlemen can hardly patent the coating with gelatin, but only the particular process they employ. Besides, the best test is an assafœtida pill for the retentive power of the coating, as regards odors; and the iodide of iron pill for its excluding power for moisture and oxygen. A hasty opinion of such preparations is of no value except when intended to be used improperly. The specimen sent is made very neatly, and the pills retain their polish well.

DINNER AND TESTIMONIAL TO JOHN MACKAY, PHARMACEUTICAL CHEMIST, OF EDINBURGH.—When the Pharmaceutical Society was founded in 1841, its jurisdiction was made to include England and Scotland, Ireland being already provided through its Apothecaries' Hall. Owing to the remains of Scotch Nationality of feeling it was deemed best to include the Scotch in a separate sub-society under the name of the North British Branch of the Pharmaceutical Society, which had its separate officers and administration yet subordinate to the parent society, represented at Bloomsbury Square. For twenty-eight years the important and laborious office of Secretary has been held by Mr. John Mackay, to the entire satisfaction of his colleagues in Scotland and England. So sensible were they of this that for some time past it had been determined to present the Secretary with a substantial testimonial and a dinner. On the evening of

Thursday, the 28th of May, a party of about fifty gentlemen (says the Chemist and Druggist for June) assembled at the Douglass Hotel, Edinburgh, and presented to Mr. Mackay several handsome pieces of plate, the most prominent being a silver salver with the arms of the Pharmaceutical Society engraved upon it.

The Chair was occupied by Mr. H. C. Baildon. After the usual toasts the president made a speech, recounting the varied and valuable services of Mr. Mackay, to which the latter made an admirable reply, which, had we space, would do to reprint.

SECRET REMEDIES IN SPAIN.—Under this Caption the *Med. Press and Circ.*, May 12, informs us that the interdiction which has heretofore excluded the importation and sale of quack and patent medicines in Spain has been removed by Minister Sagasta, by an order issued April 12th. This change of policy is said to have been adopted owing to representations made by the Apothecaries of Madrid, that the restrictions were prejudicial to the Empire, the public health and their own interests. In the order a "secret" remedy is defined to be one of which the composition cannot be discovered, or of which the formula has not been published. All the French and other patented galenical preparations will now have ingress, subject of course to heavy taxes for revenue.

OPIMUM CULTURE IN INDIA.—According to the *Indian Daily News* (Med. Press and Circ., July 7,) the authorities in Bengal have determined to largely increase the culture of opium, consequent upon the proclamation of the Emperor of China prohibiting the cultivation of the poppy for opium in any part of the Imperial dominions. The abandoned agencies of Seetapore and Rohilkund are to be immediately reopened. "The fixed annual quantity of provision opium is to be 48000 chests, with, in addition, a reserve of 10000 chests to be gradually provided. The consequent necessary orders have been issued in time for the season of 1869—70. This looks very much as though the E. Indian government intended to ignore the Chinese custom house officials. Perhaps the treaty of Commissioner Burlingame with England may have some bearing in the case."

ROMAN CHAMOMILE.—A copy of the circular of Brückner, Lamper & Co., of Liepzig, dated July, announces that, owing to the bad weather, the prospect for a crop of Chamomile flowers is quite unfavorable, and unless a change occurred within two weeks it would be seriously deficient. The price it is believed will be 6 to 7 silver groschens per lb.

PHARMACOPEIA ITALICA.—According to the Druggist of Jan. 11, Prof. Semmola has presented the project of an official Italian pharmacopœia to the Committee, who are drawing up a new Sanitary Code.

THE NEW TRIBUNE BUILDING, CHICAGO.—Some one has politely sent us an engraving of this fine building, and a printed description of the structure and its interior arrangements. Our space does not permit us to more than acknowledge its reception.

A Manual of Chemistry, theoretical and practical, by George Fownes, F.R.S., &c. From the tenth revised and corrected English edition. Edited by Robert Bridges, M.D., Prof. of Chemistry in the Philadelphia College of Pharmacy. With 197 illustrations. Phila.: H. C. Lea, 1869: pp. 857, 12mo.

It is a subject of general satisfaction among a large number of chemical readers, teachers, and students, that this standard treatise has at last received the revision it has so long needed, and that teachers using it as a text book can refer to it as up to the time.

Among the new matter the new views in relation to heat and light are fully noticed, especially as regards the development of heat by mechanical motion, and the discoveries incident to spectroscopic studies.

The new views regarding nomenclature which now obtain among continental chemists are applied to the oxides. Ozone is enlarged upon, and the occlusion of hydrogen noted, but the edition was printed before Prof. Graham's later views on the metallic nature of hydrogen were published. Dialysis and osmose are also fully noticed. Carbon follows hydrogen and nitrogen with the oxygen and hydrogen compounds. Sulphur, selenium, tellurium in a group are followed by boron, silicon and phosphorus.

The new views in relation to equivalent numbers, atoms and notation are fully discussed, and their bearing on the subjects following, require close study by all who have not been keeping up with the progress of chemical science since the last edition of Fownes' was published. The classification of metals according to their atomicity into six classes, called *monad*, *dyad*, *triad*, *tetrad*, *pentad*, and *hexad*, each of which includes two or more groups, is one of the novel features.

The organic bodies are arranged according to their composition, the organic series of carbon and hydrogen ranging first. They consist of 12 series and are far too complex to present a view of them in this notice. These are followed by the alcohols and ethers of modern chemistry; then come the organic or carbon acids; the aldehydes, and the ketones, a class of bodies derivable from the aldehydes.

Organic compounds containing nitrogen follow these, including the cyanogen and uric acid compounds; then the compound ammonias or amines, or artificial alkaloids, then the natural alkaloids. The metallic organic bases, the amides, and the unclassified organic bodies largely derived from the animal kingdom.

It will require increased attention on the part of students to follow Fownes in the new edition, for not only is it much extended, but much of it has been radically changed as regards position and notation.

Braithwaite's Retrospect of practical Medicine and Surgery. Part lix. July. Uniform American Edition. New York, W. A. Townsend and Adams, publishers, 1869: pp. 284, octavo. (Price \$2.50 per annum.)

The half-yearly abstract of the Medical Sciences. Being a digest of British and Continental medicine and of the progress of medicine and the collateral sciences. Vol. xlix. July, 1869. Philadelphia, Henry C. Lea, 1869: pp. 293. (Price \$2.50 per annum.)

These useful semi-annual visitors are again welcomed with their useful burthen of valuable papers and abstracts, brought together from a wide range of journals during the past six months in a permanent and convenient form,

The Family Adviser and Guide to the Medicine Chest. A concise handbook of domestic medicine. By Henry Hartsborne, A.M., M.D. Revised and enlarged. Philadelphia, J. B. Lippincott, 1869.

The adaptation of this little volume to the purposes indicated in the title, have been well endorsed by the necessity for a new edition so soon after that noticed in our number for Sept., 1868. Its conciseness renders it fit to carry in the pocket or valise, and will be useful to all travellers.

Feticide or Criminal Abortion.—A lecture introductory to the course on obstetrics and diseases of women and children. University of Pennsylvania, session 1839—40. By Hugh L. Hodge, M. D. Philadelphia, Lindsay & Blakiston, 1869. For sale by the publishers. Price 30 cents.

This lecture, published twice before (1840, 1854) is now again printed with a prefatory note by the author. This is sufficient evidence of its merit and of its need at the present time.

Circular No. 2. War Department; Surgeon General's Office, Washington, Jan. 2d, 1869. A Report on excisions of the head of the femur for gun shot injury. Washington, Government printing office, 1869; pp. 141, quarto.

This report is made to the Surgeon General by George A. Otis, Assistant Surgeon, and brevet Lieut.-Colonel U. S. Army. It is partly historical of the subject from the early part of the 18th century to the Crimean War. The cases detailed in the Report amount to 63, of which 5 were successful and 58 fatal. The author details briefly cases by other treatment and by amputation at the hip joint, and draws his conclusions in the final chapter.

The work is elegantly printed, and illustrated by several lithographs and numerous excellent wood-cuts, and reflects great credit on the Department as a contribution to the literature of surgery.

Journal of the Gynæcological Society of Boston. Devoted to the advancement of the knowledge of the diseases of women. Edited by Winslow Lewis, M. D., Horatio H. Storer, M. D. and George H. Bixby, M. D. Boston James Campbell, 18 Tremont street. Vol. i, No. 1, July, 1869. Monthly; pp. 64.

It is the object of this society to draw a clear line of distinction between obstetrics and the diseases of women, for the study of which the Gynæcological Society has been instituted. A physician may be a skilful accoucher and yet be unread in those obscure nervous diseases which afflict women and cause such untold suffering. Whatever light can be thrown on this study by the joint action of the earnest members of the Society it is proposed to publish in the *Journal of the Gynæcological Society*.

Hygiene in its relation to therapeutics, a paper read before the New York Medical Journal Association by Alfred L. Carroll, M. D., &c. New York, Turner and Mignard, 109 Nassau street. 1869; pp. 37.

Received from the author.

Treatment of Lachrymal affections. By Prof. Arlt, of the University of Vienna. Translated by permission of the author by John F. Weightman, M. D., Philada. Lindsay & Blakiston, 1869; pp. 30, with a lithographic plate.

The translator has done good service in giving this paper of Prof. Arlt to the American medical public in a form so serviceable.

OBITUARY.

M. J. E. BERARD, formerly professor of chemistry to the faculty of sciences of Montpellier, France, died on the 10th of June, at the advanced age of 80 years. He was born at Montpellier, Oct. 12, 1789. M. Berard occupied for many years the Chair of Chemistry in the *Ecole de Pharmacie* in his native city, one of the three schools of pharmacy in France. He was dean of the medical faculty and member of various learned societies, and at the same time owned a large chemical establishment, which gave him wealth and independence. He is described as a good lecturer and very successful as an experimenter.

PROF. H. E. DUSSANCE died at his residence, at New Lebanon, Columbia County, New York, on the 20th of June last. He was born in Paris, Dec. 25, 1829. Educated in chemistry as a student of Chevreul, he acquired great proficiency, and so good a reputation as to be appointed to one of the Chairs of industrial chemistry in the *Ecole Polytechnique* (*Jour. Mat. Med.* 220, July, 1869) Prof. Dussance occupied the position of Chemist in Tilden & Co's. Laboratory, and was one of the Editors of the *Journal of Applied Chemistry*, and the Editor of several other works.